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ORIGINAL ARTICLES

HIDDEN THROMBUS IN FATAL PULMONARY EMBOLISM 433
M. Gage, M.D., New Orleans

EVALUATION OF STELLATE GANGLION BLOCK FOR ACUTE FOCAL CEREBRAL INFARCTS 438
C. H. Millikan, M.D.; J. S. Lundy, M.D., and L. A. Smith, M.D., Rochester, Minn.

ARTERIALIZATION OF THE CORONARY SINUS 441
C. P. Bailey, M.D.; G. D. Geckeler, M.D.; R. C. Truex, Ph.D.; W. Likoff, M.D.; N. A. Antonius, M.D.; A. W. Angulo, Ph.D.; H. P. Redondo-Ramirez, M.D., and W. Neptune, M.D., Philadelphia

INTERPRETATION OF TESTICULAR BIOPSY 449
W. O. Nelson, M.D., Iowa City

RECOGNITION OF SURGICALLY TREATABLE NEUROLOGICAL DISORDERS OF CHILDHOOD 455
J. M. Williams, M.D., and H. Stevens, M.D., Ph.D., Washington, D. C.

TWO-STEP EXERCISE ELECTROCARDIOGRAM 458
A. M. Master, M.D.; L. Pordy, M.D., and K. Chesky, M.D., New York

ANOMIC APHASIA 462
C. Suter, M.D., Charlottesville, Va.

HYDROCORTISONE (COMPOUND F) ACETATE OINTMENT IN DERMATOLOGICAL THERAPY 468
M. B. Sulzberger, M.D.; V. H. Witten, M.D., New York, and C. C. Smith, M.D., Augusta, Ga.

CLINICAL NOTES

EVANESCENT EPIGASTRIC MASS DUE TO MEDIAL PTOSIS OF KIDNEY 472
F. H. Straus, M.D., Chicago

CHEMICAL ENCEPHALOMYELOPATHY 473
A. L. Drew, M.D., and K. R. Magee, M.D., Ann Arbor, Mich.

SPECIAL REPORTS

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES 474

Council on Physical Medicine and Rehabilitation

MIRACLE HEARING AID 475

EDITORIALS

Report of the Advisory Committee on Internships 476
Misuse of Ophthalmic Anesthetic Ointments 476
The First Day of Life 477

ORGANIZATION SECTION

The Physician's Federal Income Tax 478
Federal Medical Legislation 480
State Medical Legislation 481

REGULAR DEPARTMENTS

Medical News 482
Meetings 486
Examinations and Licensure 487
Deaths 488
Government Services 490
Foreign Letters:
Brazil 491
Chile 491
Israel 492
Italy 493
London 493
Sweden 495
Switzerland 495
Correspondence:
Health Insurance Plan of Greater New York. Medical Education Abroad. Committee on Lye Legislation. Eli Lilly Medical Research Fellowship (South Africa). Simple Mastectomy. Anesthesia in Obstetric Practice. Sterility of Market Cotton. Louis T. Wright. 496
Council on Medical Education and Hospitals:
Report of the Advisory Committee on Internships 499
Bureau of Medical Economic Research:
The Norris Panacea 511
F. G. Dickinson, Ph.D.
Medical Motion Pictures 512
Medical Literature Abstracts 513
Book Reviews 527
Queries and Minor Notes:
Commercial Gamma Globulin and Poliomyelitis Prophylaxis. Iontophoresis. Parents as Blood Donors to Their Infant. Dyspnea on Exertion. Ocular Mucous Membrane Syndrome. Repeated Unsuccessful Pregnancies. Streptomycin Toxicity. Infection of Seminal Vesicle. Vitamin B_{12} and Arthritis. Colic in Infants. Escherichia Coli Respiratory Tract Infections. Aniseikonia. Air Embolism. Tortuous Veins Near Poupart's Ligament. Pregnancy Following Ligation of Vena Cava. Pediculosis of Eyelashes. Jitter Legs. 531
National Organizations of Medical Interest ..... Adv. Page 4

WASHINGTON NEWS

Atomic Energy Commission Report to Congress. Members of Senate Committees. Proposed Social Security Program. The Pool of Gamma Globulin. Medical Records of One Thousand Priority 3 Physicians Checked. Bill to Authorize Factory Inspections. Census of Mental Patients. Miscellany. ..... Adv. Page 15
Tonics and Sedatives ..... Adv. Page 42
Books Received ..... Adv. Page 64

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HIDDEN THROMBUS OF FATAL PULMONARY EMBOLISM

CHAIRMAN'S ADDRESS

Mims Gage, M.D., New Orleans

I know of no catastrophe that is so indelibly imprinted on the physician's memory as the sudden death of a patient from pulmonary embolism. So tragic is such an event that it is mandatory that all physicians become familiar with all phases of thromboembolism, so that an effort may be made to treat the thrombosis before sudden death from pulmonary embolism ensues. This is even more difficult than may be suspected, since little more is known today regarding thrombus formation than was known as long ago as 1793, when John Hunter [1] described the condition and suggested possible etiological factors. This is true despite the fact that there has been much clinical and experimental investigation regarding the etiology, mechanism of formation, classification, prophylaxis, and treatment.

INCIDENCE

The incidence of thromboembolism remains about the same today as it was years ago; for example, the incidence of 0.082% of fatal embolism occurring between 1889 and 1911, as reported by Wilson,[2] is only slightly different from that of 0.073% reported by Ochsner and associates [3] in 1951. Despite this fact, some writers [4] have suggested that the incidence of fatal pulmonary embolism is increasing. In 1927, Hegler [4a] stated that the incidence of thrombosis had definitely increased since World War I. He pointed out that, of 14,600 admissions to the St. George Hospital in Hamburg in 1913, thrombosis occurred in 19, and in 1,370 autopsies thrombosis was found in 65; whereas in 1926 there were 17,440 admissions with 153 cases of thrombosis and 1,481 autopsies with 102 cases of thrombosis. Axhausen,[4b] who made a statistical study of 11,266 necropsies between 1912 and 1928 stated that there was a definite decrease of thromboembolism up to 1921 and a definite increase beginning in 1923. Again, in 1936, Prettin,[4c] in an attempt to ascertain the veracity of the reported fact that a number of writers had noticed an increase in the number of deaths from thromboembolism since 1926 studied autopsy records between 1922 and 1935. From 1922 to 1927, the mean death rate from pulmonary embolism was 4 ± 1.05%; from 1927 to 1931, it was 4.2 ± 1.25%; and from 1932 to 1935, it was 7.6 ± 1.47%. These statistics certainly would seem to indicate an increase in occurrence of this condition. However, a statistical review of reported incidences of both clinical and necropsy cases of thromboembolism over a period of about 60 years yields an entirely different picture, which has led me to believe that there is a wide fluctuation in the incidence of thromboembolism, the rise and fall being relatively similar through the years. The accompanying table, which shows the incidence in the larger reported series during the last 60 years, suggests that the disease probably occurs in 10 year cycles. Bela's [5] statistical report covering a period of 20 years (1913 to 1933) definitely demonstrates this cycle. In 6,581 autopsies, venous thrombosis was found in 926 cases (14%) and pulmonary embolism in 640 (9.7%). Between 1915 and 1919, the total number of cases of thrombosis decreased about 22%, whereas, between 1919 and 1928, the incidence of thrombosis increased by 12%. Recent writers have suggested that intravenous clotting occurs more frequently in winter than in summer months; however, Prettin [4c] was unable to detect any seasonal difference in the occurrence of this condition, and I have observed no seasonal variation in New Orleans.

ETIOLOGY

The etiology of thrombosis remains obscure, although many theories have been advanced. The clinical and physical properties of in vitro clotting are thoroughly understood, but in vivo intravenous clotting remains an enigma. The condition is similar to that of persons who bleed postoperatively or who have a bleeding tendency but do not have hemophilia. They sometimes bleed fatally, but the reason is not known, and they are designated as hemorrhagic variants.

Certain factors are known to have definite bearing on intravenous clot formation. In 1793, John Hunter [1] proposed that an alteration in the circulating blood was the

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precipitating factor in thrombus formation. Virchow,[6] in 1846, added to this retardation of the blood stream by mechanical agents. In 1856, Brucke [7] considered, in addition, alterations in the vessel wall. Howard,[8] early in the present century, again suggested retardation in the venous blood flow. Cummine and Lyons [9] thought the presence of fibrinogen-B was the predominating factor in thrombus formation; however, this as well as an increased blood clotting tendency has not been definitely proved to be a factor. In 1950, Kay and co-workers [10] stated that the cause of postoperative thrombosis was a deficiency in antithrombin, but McLachlin and associates [11] proved the inaccuracy of this observation. It is my contention that the excessive platelet formation and its rapid destruction that occur after every type of operation in both the young and old is an important precipitating factor. This is one of the oldest theories. Finally, the sludging of blood that occurs in shock, infection, and prolonged operations and the use of certain drugs must be considered.

It is my belief that not one but many factors act as precipitators in the formation of intravenous clotting. One of the oftenest suggested factors is slowing of the venous blood flow. It is known that inactivity or bed rest results in lowered metabolism, and retardation of the blood flow is conducive to biophysical and biochemical changes within the blood as well as in the vessel wall, such as, stasis in the vasa vasorum, changes in the endothelial lining of the vessels, and formation of sludged blood. Knisely and co-workers [12] demonstrated that in the presence of injury and infection the red blood cells become sticky (owing to a glossy, cottony precipitate, which may be fibrin or a fibrin-like material) and rapidly adherent to one another. This adherent quality of the red cells results in formation of first a small, then a larger mass of red cells, which finally occludes the lumen of a smaller vessel. The changes in the endothelial lining of the vessel wall result in a cement-like substance at the cellular junction, causing the red cells to stick to the endothelial cells, with thrombus formation resulting. This same phenomenon occurs following injection of sclerosing solution into varicose veins. The first change noted is not in the blood but in the endothelial lining of the vessel. This also occurs in thrombophlebitis. The thrombus in both disorders develops from the wall, where it is fixed, to the center of the vessel, producing occlusive thrombosis. That is the reason that embolism rarely occurs in persons with sclerosing thrombosis of varicose veins or thrombophlebitis. Rössle [13] and Voegt [14] believed that the degenerative changes of the calf muscles lead to the formation of substances that cause the local thrombosis. Voegt also believed that degenerated calf muscles liberate a thrombogenic substance that leads to terminal thrombosis.

It has been shown that in 1 to 3% of all hospital admissions there is a fertile field for the development of thrombotic phenomena in the lower extremities. When there is no interference with the blood volume flow or when it is augmented, thrombus formation does not bar sympathectomies for hypertension reported by occur, as evidenced by the fact that in 1,200 thoracolumbar-Allen [15] there was not a single case of postoperative thrombosis. Destructive operations in which excessive tissue has been removed may flood the blood stream with tissue juices and tissue products, the main constituent of these being a thrombogenic substance (thrombokinase), which in some cases rapidly usurps all the circulating antithrombin, resulting in slowed or sludged venous blood, puddling of the blood in the veins of the lower extremities, and subsequent development of thrombi. Wilson [2] pointed out that with an increase in the scope and magnitude of surgical procedures there was an almost concomitant increase in the incidence of thromboembolism.

Contrary to the generally accepted concept that thrombosis is an acute disorder, I agree with Raeburn [16] that in most instances thrombosis in the veins of the legs is an additive process. He believes there is a modification of the colloidal properties of a group of lining endothelial cells of the vessels that encourages platelet adhesions, finally resulting in thrombosis. I believe that both the plantar veins and those in the leg act as centers for the formation of phlebothrombosis, as has been shown by Hunter,[1] Rössle,[13] Voegt,[14] Raeburn,[16] and Neumann.[17] In a large autopsy series, they showed that mature thrombus formation occurred in the deep veins of the lower extremities in patients who did not have pulmonary emboli. Hunter reported an incidence of 51% and Neumann 66.6%. Raeburn observed that in 54.2% of his cases of thrombosis the thrombus built up by successive thrombotic sequences. Microscopically, the veins were in various stages of repair. I believe that these preexisting thrombi act as starting points for the postoperative development of phlebothrombosis. In phlebothrombosis, sludged blood or a bland clot of varying length caps the part of the mature thrombus that is attached to the venous wall. This ill-formed and loose thrombus waves in the blood stream until it is swept off as an embolus, which may cause a fatal or nonfatal pulmonary infarct, depending on the size of the detached, ill-formed intravenous clot.

This same type of phenomenon, though rare, occurs in the presence of thrombophlebitis. The clot is first formed by fixation to the wall of the blood vessel and then builds up until the lumen of the vessel is occluded. In this way the thrombus in thrombophlebitis is matured and thoroughly fixed to the wall of the vessel. Therefore, an embolic phenomenon seldom originates from the thrombus of thrombophlebitis; however, a bland thrombus or thrombus of phlebothrombosis can occur proximal to and cap an existing thrombophlebitic thrombus. It is from this ill-defined, soft, bland thrombus that small or large particles break or are swept off to produce the complication of embolism. They have the same potentialities as though the entire pathological process were phlebothrombosis. From this standpoint, thrombophlebitis is important; it is the hiding place of the "hidden thrombus" in fatal pulmonary embolism. A consideration of thrombophlebitis in itself is not within the scope of this paper.

CLINICAL TYPES OF THROMBOSIS

The clinical types of thrombosis that I have observed may be divided into two categories: (1) thrombophlebitis and (2) phlebothrombosis of Ochsner and DeBakey.[18] Phlebothrombosis (bland thrombus of the older writers) should be further divided into three types: (1)

the malignant form, responsible for most of the fatal pulmonary emboli; (2) the slowly progressive form, which accounts for most of the nonfatal pulmonary emboli; and (3) the chronic type, which is almost impotent and produces no complications.

In 1938, Neumann [17] divided his cases clinically into two types, depending on the center of development or origin. The first is the benign type, with the center of origin in the veins of the leg. Its incidence increases progressively with age, and there is a tendency toward occurrence of multiple nonfatal emboli in the lungs. His second is the malignant type, which has its center of origin in the plantar veins and is characterized by rapid progression of the thrombus; it occurs at an earlier age, and there is no increase with age, but there is a tendency toward fulminating fatal pulmonary embolism. In both types, the emboli originate from a thrombus that has progressed to the veins of the thigh.

CLINICAL MANIFESTATIONS OF THROMBOSIS

In the majority of cases of progressive phlebothrombosis the clinical manifestations are seldom indicative of the exact underlying pathological changes in the veins of the lower extremities. It is only the occlusive venous thrombus that produces clinical signs and symptoms of thrombosis. Most typical of this is a case of thrombophlebitis. The lumen of the vessel is occluded, and diagnostic signs and symptoms of thrombophlebitis develop. If, however, a proximal bland thrombus, sludged blood, or thrombus of phlebothrombosis caps the fixed clot of thrombophlebitis and it rapidly progresses into the veins of the thigh (waving like a piece of seaweed in the venous blood stream), there are no clinical signs or symptoms denoting their presence. This is the "hidden thrombus" of thrombophlebitis that gives rise to fatal and nonfatal pulmonary embolism. This is a true type of rapid, progressive phlebothrombosis superimposed on a clinically proved thrombophlebitis. Almost all fatal and nonfatal pulmonary emboli originate from such clotting in the veins of the lower extremities. In most cases of pulmonary embolism there are no clinical manifestations prior to the patient's death; however, there may be subtle evidences of the presence of a thrombus, which can be detected if sought.

In 1907, Miller [19] stated that postoperative thoracic pain of varying severity preceded by a number of days the onset of clinical femoral thrombosis. This is not a rare occurrence in cases of small or nonfatal pulmonary emboli. I have proved this by operating on such patients, ligating the superficial femoral veins bilaterally, without demonstrating the presence of intravenous clotting (phlebothrombosis or bland clot) at the site of the operation, and this has been verified by phlebotomy. In 1909, Crouse [20] stated that he agreed with Abbott,[21] who pointed out, in 1906, that preoperatively existing thrombi are often the cause of postoperative complications, such as fatal sepsis, pulmonary emboli, and pneumonia. These are indirect signs and symptoms of existing intravenous clotting and should demand a careful search for their anatomic location. I would unhesitatingly state that in the absence of bland intravenous clotting, pulmonary embolism, either fatal or nonfatal, does not occur.

There are some signs and symptoms that are suggestive of the presence of thrombosis (phlebothrombosis) of the deep veins of the legs and thighs, although Michaelis [22] stated that there are no reliable premonitory signs. Mahler [23] considered the "treppenpuls" a diagnostic sign. The pulse rise occurs in a definite step-up-like curve until the maximum is reached. The pulse rate is out of proportion to the low-grade fever. Rielander [24] considered pain in the groin as diagnostic of deep venous thrombosis in the legs. I believe that this is due either to a thrombus of phlebothrombosis that has progressed into the superficial femoral veins or to concomitant lymphadenitis of the femoral lymph glands. Kelling [25] believed that pain in the leg, with or without associated swelling, was of diagnostic importance; however, swelling of the leg can be detected only by careful comparative measurements. Homan's sign, with which every physician is familiar, is diagnostic of phlebothrombosis of the deep veins of the calf muscles. This sign is elicited by gradual but gentle deep pressure over the aspect of the calf muscles, pressing toward the posterior aspect of the tibia. If phlebothrombosis (intravenous bland thrombus) is present, such pressure will produce pain. The other sign is elicited by production of pain in the calf muscles or popliteal space if the foot is hyperflexed. Both signs are of relative importance in localizing the presence of phlebothrombosis. I believe that the deep veins in the leg must be occluded to produce either sign. Neither is demonstrative of the proximal loosely formed clot that caps the occlusive thrombus, whether it is phlebothrombotic or thrombophlebitic in character.

Edema of the foot, ankle, or leg, even though slight, is seldom associated with phlebothrombosis. It can be determined only by careful comparative measurements. Edema is always associated with thrombophlebitis because of its occlusive nature and the pathological changes in the venous wall and perivenous tissue. The malignant form of phlebothrombosis (the type responsible for most fatal pulmonary emboli) that rapidly progresses proximally and is quickly occlusive distal to the thrombotic head, does, however, produce rapidly advancing edema. Sometimes the edema extends to the inguinal region. It is seldom as great as occurs in thrombophlebitis, but nevertheless it is diagnostic of the rapidly developing malignant form of phlebothrombosis.

DIAGNOSIS

The diagnosis of intravenous clotting is extremely difficult to make. Since fatal pulmonary embolism usually has no previous clinical manifestations, it is virtually impossible to predict its occurrence in the majority of cases. In fact, it has been estimated that fatal pulmonary embolism is not diagnosed before sudden death in 45 to 82% of the cases. In 1936, Prettin [4c] reported that in a series studied by him 75% of the cases of pulmonary embolism were not diagnosed before necropsy.

Laboratory tests in the diagnosis of existing, progressive, malignant or benign types of intravenous thrombosis have been found to be of questionable value. Probably the two most promising were the fibrinogen-B of Cummine and Lyons [9] and the antithrombin of Kay and co-workers.[10] Trethewie and associates [26] reported in 1950 that fibrinogen-B was found in one-half of 108

patients. They said that signs of venous thrombosis and pulmonary infarction developed both in patients who had fibrinogen-B and in those who did not. They also concluded that clotting time was not significant as an indication of the occurrence of phlebothrombosis. McLachlin and associates,[11] in their evaluation of the usefulness of the determination of antithrombin blood levels, concluded that they could not recommend this test for the prediction of venous thrombosis under ordinary hospital conditions.

As there is no reliable test for predicting or demonstrating early thrombus formation at present, reliance must be placed solely on the clinical manifestations, few though they be. In the presence of pain in the foot, calf, or thigh, slight elevation in temperature with a pulse rate out of proportion to the fever, with or without slight edema, a diagnosis of phlebothrombosis of the deep veins of the leg can be made. If Homan's, Keeling's, and Rinelander's signs are demonstrable and there is progressive edema (not of the thrombophlebitic type) up to the inguinal region, a diagnosis of a rapidly progressive malignant form of phlebothrombosis should be made. If the patient has typical thrombophlebitis or milk leg and a nonfatal pulmonary embolism develops, a diagnosis of additive phlebothrombosis proximal to a previously existing thrombophlebitis is mandatory.

The age of the patient may be of indirect diagnostic value, since from 50 to 92% of cases of intravenous clotting occur in patients over 40 years of age. In this age group, preoperative thrombi occur in the calf and thigh muscles in over 65%. Therefore, the possibility of the occurrence of thrombotic phenomena in this age group must be kept in mind, so that a constant search for the hidden phlebothrombosis can be made before fatal embolism occurs.

TREATMENT

Despite the numerous modern scientific discoveries, there has been little that is new in the treatment of intravenous clotting in the last 40 years, with the exception of the introduction of anticoagulants and inferior vena cava ligation. For convenience of discussion treatment may be considered under the headings of prophylactic (medical and surgical) and anticoagulant treatment.

Prophylaxis.—As long ago as 1908, Frazier [27] realized that treatment is of so little benefit that every prophylactic precaution should be taken. Routine preoperative bilateral ligation of the superficial femoral veins has been advocated by Allen.[28] He reported one case of fatal pulmonary embolism in 458 patients in whom the femoral vein was ligated prophylactically, whereas, in 458 in whom this was not done, 26 had fatal pulmonary embolism. Careful postoperative ligation of the superficial femoral vein in early phlebothrombosis of the leg and nonfatal pulmonary embolism is curative. If the intravenous clotting has progressed to the iliacs or if phlebothrombosis is superimposed on preexisting thrombophlebitis, low ligation of the inferior vena cava is indicated. It is interesting that 38 years ago McLean [29] stated that ligation of the vein proximal to the clot would be of no benefit. Veal [30] has reported reduction in postoperative pulmonary complications by ligation of the superficial femoral vein simultaneously with amputation of the legs for gangrene. At operation, gentle handling, with minimal destruction of tissue, will help to prevent intravenous clotting. Rogers [31] advocated use of a sponge rubber cushion beneath the achilles tendon, elevating the calf muscles from the operating table. He reported that this simple method was used in every patient operated on during a 12 year period, without a single fatality from pulmonary embolism. This may be in line with the report of Potts and Smith,[32] who showed experimentally that by elevating the hind leg of dogs, the blood volume flow in the inferior vena cava increased from 100 to 150%.

Postoperatively, a number of prophylactic measures may be employed. Immediately after operation, the patient should be placed in bed without pillows and his legs should be exercised by the nurse. As soon as he regains consciousness, he should be made to breathe deeply at frequent intervals and to move his legs often. He should also be encouraged to walk as soon as possible. This has been recommended as a means of prevention of phlebothrombosis, although I agree with Ranzi,[33] Wilson,[2] and Kirby and Fitts [34] that early ambulation has no direct relationship to the incidence of thrombosis or pulmonary embolism. Early ambulation does, however, augment the blood volume flow in the lower extremities in the absence of obliterating peripheral vascular disease. This has significant bearing on the physiological, biochemical, and biophysical aspects of the circulating blood in the veins of the lower extremity, although over 50% of patients that have fatal embolism have peripheral vascular disease. Thus, indirectly, it has a preventive relationship to the additive formation of bland thrombosis. Therefore, early ambulation should be encouraged.

Anticoagulant Therapy.—Kay and associates [10] recently recommended the use of alpha-tocopherol and calcium gluconate as a prophylactic measure against the development of thrombosis postoperatively. This has proved of little, if any, value in the prevention of thrombosis and embolism, although Crump and Heiskell,[35] in 1952, reported the incidence of fatal pulmonary embolism in a group treated with alpha-tocopherol and calcium gluconate to be zero, whereas in an untreated group of 410 patients the incidence was 0.24%. I have never used these preparations but have seen phlebothrombosis and fatal pulmonary embolism occur in patients in whom they had been given postoperatively.

Probably the most frequently used anticoagulant prophylactically and therapeutically is heparin sodium. In 1924, Mason [36] demonstrated experimentally that heparin sodium would prevent the formation of intravenous thrombosis induced by injection of a potent thrombokinase into the blood stream of normal dogs. It is, therefore, an agent that will prevent intravenous clotting in human beings, but it will not dissipate developing or already developed phlebothrombosis. That is the reason that numerous cases of fatal and nonfatal pulmonary embolism have occurred in patients who had been heparinized. Heparin sodium will stop the formation and progression of thromboses but will not prevent a phlebothrombotic clot from breaking away into the blood stream to act as an embolus. In 1947, Crafoord [37] reported an incidence of fatal pulmonary embolism in 18% of 264 patients with thrombosis treated conservatively between 1929 to 1938, whereas, from 1940 to

1947, 1% of 309 patients with thrombosis treated with anticoagulants had fatal pulmonary embolism. This definitely shows that the use of heparin sodium does lower the mortality from thromboembolism. Bauer [38] believed that it is possible to arrest thrombosis by heparin sodium therapy if the diagnosis is made early enough. Murray,[39] in 1947, reported 371 patients with thrombosis treated with heparin sodium without a single fatality due to pulmonary embolism. No deaths occurred in 149 patients with pulmonary embolism, in 52 of whom it was massive, who received controlled heparin therapy. He emphasized that clotting time must be held down to about 15 minutes during administration of this anticoagulant.

In patients who have to remain in bed for three to four weeks, controlled heparin therapy should be maintained. It must never be forgotten that anticoagulant therapy, if not adequately controlled, will result in minor to massive hemorrhage, which at times is hard to control. Hemorrhage, which may be fatal, may occur in the wound, brain, spinal cord, liver, spleen, pancreas, lungs, or gastrointestinal or genitourinary tracts. Heparin sodium is, therefore, a dangerous therapeutic agent. A constant effort should be made to anticipate the earliest hemorrhagic tendency so that administration of the drug can be immediately discontinued and corrective measures (transfusions and administration of vitamin K) promptly instituted.

Another disconcerting fact is the sensitivity of certain patients to average doses of heparin sodium. The opposite to this, that is, resistance to heparin sodium, also occurs in certain persons. These undesirable qualities can be anticipated by exacting laboratory tests. Finally, heparin sodium is too expensive for widespread usage. Recently, two synthetic preparations that have effects similar to those of heparin sodium have been introduced: treburon® (reported to be the sodium salt of sulfated polygalacturonic acid methyl ester methyl glycoside), which is not commercially available at present, and sodium polyanhydromannuronic acid sulfate (paritol®). Treburon® is probably the better of the two. Paritol® C was recently investigated by Martin and Boles.[40]

I use the following regimen for the management of patients with thromboembolism. The diagnosis of phlebothrombosis is established from local and regional clinical manifestations or by the occurrence of a nonfatal pulmonary infarct. The patient's superficial femoral vein is ligated in continuity. If a patient has a nonfatal infarct after ligation, anticoagulants are given or the inferior vena cava is ligated. If the thrombus has progressed into the iliac veins, it can be sucked out gently through the femoral vein, after which the femoral vein is ligated. In about 80% of cases, the proximally occurring thrombi are of the thrombophlebitic type, adherent to the vein wall without subsequent complications. In about 20%, phlebothrombosis develops proximal to the ligature and may give rise to fatal or nonfatal pulmonary embolism. There is no reliable test to distinguish patients in whom pulmonary embolism will develop from those in whom it will not develop from progressive phlebothrombosis proximal to the site of venous ligation. Since January, 1952, four patients have died of fatal pulmonary embolism following ligation of the superficial femoral vein for phlebothrombosis on the surgical service at Charity Hospital in New Orleans. Therefore, as a prophylactic measure, well-controlled anticoagulant therapy should be employed in these cases. If the right or left iliac vein is involved in rapidly progressive, malignant phlebothrombosis or progressive phlebothrombosis, the inferior vena cava should be ligated immediately. In thrombophlebitis complicated by pulmonary embolism the inferior vena cava should be ligated above the advancing phlebothrombosis. Anticoagulants may or may not be given soon after the operation. In all cases of septic pulmonary infarcts from suppurative thrombophlebitis of the pelvic veins, ligation of the inferior vena cava plus the ovarian veins is mandatory. Lumbar sympathectomy should be done concomitantly. In uncomplicated thrombophlebitis, repeated blocks of the lumbar sympathetic nerves with 1% procaine hydrochloride are curative. The sympathetic nerves should never be blocked in patients receiving anticoagulant therapy, since hemorrhage may occur during or after introduction of the needles. Ligation of the superficial femoral vein or ligation of the inferior vena cava proximal to the advancing intravenous thrombus or both, with or without concomitant anticoagulant therapy, is the procedure of choice in all cases of uncomplicated, benign, progressive phlebothrombosis that invades the common femoral and iliac veins. Since 1947, I have used all these methods, except anticoagulant therapy, in the treatment of benign and malignant phlebothrombosis and cases of thrombophlebitis complicated by malignant phlebothrombosis. In over 1,000 major surgical procedures, I have not had a single case of fatal pulmonary embolism.

SUMMARY

1. The incidence of intravenous clotting has tended to fluctuate over 10 year periods during the last 60 years. There appears to be no seasonal variation in occurrence in the majority of medical centers. Thrombosis will develop in from 1 to 3% of all persons admitted to a hospital, and fatal pulmonary embolism will occur in from 0.057 to 0.082%. Intravenous clotting will develop in about 3% of patients subjected to laparotomy. About 82% of cases of thromboembolism occur in patients over 40 years of age, with a maximum number at about 50 years and a decrease after 60 years.

2. The causes of intravenous clotting remain obscure. There are many predisposing factors, among which are the age of the patient, preexistence of thrombi in the veins of the lower extremities, slowing of the blood stream, increased tendency to clot, changes in the blood, postoperative increase in platelets, increased blood thrombokinase, reduction of antithrombin, deposit of a sticky substance on the red blood cells, changes in the walls of the blood vessels, colloidal changes in the endothelial lining of the vessels, changes in the vasa vasorum, infection, suppurative lesions, and preexisting thrombosis in plantar and leg veins in over 65% of patients over 40 years of age.

3. There are two types of intravenous clotting: (1) thrombophlebitis, which is subdivided into the benign form and the malignant and suppurative form, and (2) phlebothrombosis, which is subdivided into the chronic

(seldom seen clinically), benign, and progressive and malignant forms.

4. Pulmonary embolism can develop only in the presence of a fresh thrombus, never from mature thrombosis. In 80 to 90% of cases of postoperative thrombosis it originates in the venous system below the diaphragm and in over 75% it originates in the lower extremity. About 70% of emboli lodge in the lungs, 12% in the kidneys, 8% in the spleen, 5% in the liver, and 4% in the brain. There are no clinical manifestations prior to the fatal episode in from 45 to 82% of cases of fatal pulmonary embolism; however, there are subtle signs and symptoms that suggest the presence of the condition. There are no reliable diagnostic tests for thromboembolism; therefore, diagnosis must depend entirely on clinical observation.

5. Treatment is prophylactic and curative. Prophylactic measures include increasing blood volume flow in the veins of the lower extremities, preoperative bilateral ligation of the superficial femoral veins, gentle handling of tissue at operation with minimal destruction of tissue, passive exercise of the legs by the nurse immediately after operation, with active exercises when the patient becomes conscious, frequent deep breathing, prohibition of use of pillows under the knees, early ambulation, and postoperative administration of anticoagulants. Bilateral ligation of the superficial femoral veins is curative in cases of slowly progressive phlebothrombosis, if done before the thrombus progresses into the veins of the thigh. Anticoagulants (the best is heparin sodium) will prevent intravenous thrombus formation but will not prevent detachment of an existing phlebothrombotic thrombus. The inferior vena cava should be doubly ligated above its bifurcation in all cases of malignant phlebothrombosis in which the thrombus has extended into the iliac veins, in all cases of phlebothrombosis additive to thrombophlebitis with nonfatal pulmonary embolism, and in all cases of suppurative thrombophlebitis complicated by septic infarcts.

Prytania and Aline St. (15).

EVALUATION OF STELLATE GANGLION BLOCK FOR ACUTE FOCAL CEREBRAL INFARCTS

PRELIMINARY REPORT OF OBSERVATIONS ON EIGHTY-SEVEN PATIENTS

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and
Lucian A. Smith, M.D., Rochester, Minn.

Focal cerebral vascular lesions are a common cause of death and of chronic incapacity. It is understandable that many physicians are questioning whether injection of procaine hydrochloride into the stellate ganglion really produces the amazing benefit claimed for it and whether they should be doing it whenever a diagnosis of cerebral infarction, not associated with hemorrhage, is made. Such questioning is entirely logical when the physician reads the reports of Mackey and Scott,[1] Volpitto and Risteen,[2] Gilbert and de Takats,[3] and Naffziger and Adams.[4] A survey of articles by these authors reveals that, in each one, comment is made concerning the improvement that often follows an acute focal cerebral lesion as part of the natural history of the disease; but when evaluation of stellate ganglion block is attempted, the assumption is made that whatever improvement occurred was a result of the procedure and would not have happened without the stellate ganglion block. In none of the reports is there a record of observations made on a similar group of patients treated during the same time period and by the same methods save for the injections into the stellate ganglion. Denny-Brown [5] has reported careful observations made on eight patients suffering from acute focal cerebral vascular lesions treated with stellate ganglion block during the acute phase of the disease, and in each instance it was ineffective.

A review of the literature concerning focal cerebral vascular lesions discloses that there continue to be differences of opinion concerning the pathogenesis of cerebral infarction, and those interested may find the problem discussed in articles by Pickering [6] and by Gilbert and de Takats [3] and in editorial comment.[7] Authors who have studied the physiology of the cerebral circulation in health and disease have been unable to demonstrate significant alteration of the cerebral circulation following unilateral and bilateral stellate ganglion block. However, the pathophysiology of focal cerebral vascular lesions is so complex and so poorly understood that it must be admitted that such negative studies do not eliminate the possibility that stellate ganglion block might hasten or improve the degree of recovery attained by patients

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From the Sections of Neurology and Psychiatry (Dr. Millikan), the Section of Anesthesiology and Intravenous Therapy (Dr. Lundy), and the Division of Medicine (Dr. Smith), the Mayo Clinic.

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having such lesions. Our interest in the subject at the Mayo Clinic was stimulated when we were unable to reproduce, by stellate ganglion block in a small number of patients, the remarkable results recorded by others; hence, we decided to undertake a long-range study.

The literature on cerebral vascular disease does not contain an article that adequately records observations

TABLE 1.—*Incidence of Focal Cerebral Vascular Lesions in Two Groups of Patients*

	No Stellate Block Done				Stellate Block Done			
Age	Infarct	Embolus	Hemorrhage	Total	Infarct	Embolus	Hemorrhage	Total
39	2	0	1	3	2	1	0	3
40-49	5	0	0	5	4	3	0	7
50-59	11	2	2	15	3	1	0	4
60-69	20	0	1	21	9	0	0	9
70+	15	1	0	16	3	1	0	4
Total	53	3	4	60	21	6	0	27

made from day to day on a large number of patients having acute focal cerebral vascular lesions. Such observations are necessary, as a basis for comparison, when an attempt is made to evaluate a new method of treatment of this disease. It was obvious that a reasonably standard technique of caring for and observing the patients should be devised to which could be added any "new treatment" to be evaluated. A true "control" series cannot be obtained because of the many variables involved. A few of these variables are age of patient, the existence of many degrees of hypertensive vascular disease, the actual extent of the cerebral infarct, the co-

TABLE 2.—*Incidence of Hypertension and Heart Disease in Two Groups of Patients with Cerebral Vascular Lesions*

	No Stellate Block Done			Stellate Block Done		
Age	Total	Hypertension	Heart Disease	Total	Hypertension	Heart Disease
39	3	2	1	3 *	0	1
40-49	5 *	2	1	7	3	4
50-59	15 *	7	5	4 *	1	2
60-69	21 †	13	12	9	5	4
70+	16 †	12	10	4 †	3	3
Total	60	36	29	27	12	14

* Some patients had neither condition.
† Other patients had both conditions.

existence of cardiac lesions and other disease processes, and the degree of excellence of the nursing and general medical care and physiotherapy the patient receives. An investigator may be interested in what happens to such patients during the first few days after onset of the illness, in what occurs during several subsequent months, or in both. The passing of many weeks or months after the

TABLE 3.—*Relationship Between Speed of Onset of Hemiplegia and Residual Defect in Patients with Cerebral Infarct and Embolus on Whom No Stellate Block Was Done*

	Patients with Hemiplegia	
Speed of Onset, Hr.	Total	Hemiplegic or Dead 14 Days Later
3	6	6
6	13	8
12	4	3
24	6	3

onset of cerebral infarction adds even more variables, such as the excellence and duration of physiotherapy, the amount of interest shown by relatives and attendants, and the development of complications. Because of these added variables and because marked success attributable to a new therapeutic method should become evident in a few days' time, we decided to concentrate our observations on acute cases during the patients' stay in the hospital.

METHOD

A basic plan of management was devised that consisted, in brief, of a history and of general and neurological examinations. Routine laboratory tests included urinalysis, erythrocyte count, leukocyte count, hemoglobin determination, blood serologic reaction for syphilis, and determinations of corpuscular volume percentage (hematocrit) and blood volume, as well as blood chemical determinations when indicated. Roentgenograms of the head and thorax were made. In many instances the cerebrospinal fluid was examined and an electroencephalogram made.

The patients were put at rest in bed, semireclining at first and up in bed or in a chair as soon as possible. The

NAME		No.		Age	Sex	B. P.	STROKE SHEET		
Date and mode of onset:									
Date									
Stellate block									
Nicotinic acid									
Papaverine									
Consciousness									
Speech									
Orientation									
Respiration									
Buccal angle									
Arm into air									
Biceps									
Finger wiggle									
Kicks									
Dorsiflex foot									
Toe tap									
Biceps jerk									
Knee jerk									
Tendo achillis									
Babinski									
Physiotherapy									

Form used for daily recording of patient's basic neurological status.

administration of sedatives and analgesics was regulated by the consultant in charge. Maintenance of an adequate airway, oxygen therapy, and care of the bowel, bladder, and skin were directed by the consultant, aided by the nursing staff. Fluid-balance studies were performed if necessary, and care was taken not to overload the circulation by the rapid intravenous administration of solutions. Physiotherapy was started on the fifth day after the onset of the illness unless otherwise indicated. In many instances antibiotics were administered in appropriate quantities. In certain instances preparations of digitalis or anticoagulants, or both, were administered under the direction of a medical consultant. Observations concerning the patient's basic neurological status were made daily, at a standard time, and recorded in a chart devised especially for this purpose (see figure). A standard system of grading was used throughout the study.

The patients receiving stellate ganglion block had the procedure performed on the same side as the lesion, by the anterolateral approach. Ten cubic centimeters of a

1% solution of procaine hydrochloride without epinephrine was injected. In most instances three such blocks were done, approximately 12 hours apart. The procedure was considered adequate when partial ptosis and pupillary constriction developed immediately. Only those patients having, in the clinician's judgment, cerebral infarction without gross hemorrhage received stellate ganglion blocks. (The criteria used for the differential diagnosis of simple infarction, with or without thrombosis, embolism, and hemorrhage, were essentially the same as those recorded by Gilbert and de Takats.[3] Necropsy in five cases revealed that the clinical diagnosis was correct.)

OBSERVATIONS ON EIGHTY-SEVEN PATIENTS

A large number of data has been collected concerning 87 patients, and some of these data are presented in the accompanying tables. Although these tables are self-explanatory, further attention is called to table 3, in which it should be noted that all of the patients whose hemiplegia developed in 3 hours' time were hemiplegic 14 days later but that only half were hemiplegic 14 days later when the defect developed over a period of 24 hours.

stances the first stellate ganglion block for each patient was performed from a few minutes to six hours after the onset of symptoms of infarction. Of particular interest is the fact that three patients actually had effective stellate blocks during the onset of the symptoms and, in spite of the procedure, continued showing progressive loss of function until hemiplegia was present.

TABLE 5.—*Mortality Two Weeks After Onset of Focal Vascular Lesion in Two Groups of Patients*

	No Stellate Block Done				Stellate Block Done		
Age	Infaret	Embolus	Hemorrhage	Total	Infaret	Embolus	Total
39.....	0	0	1	1	0	1	1
40-49.....	0	0	0	0	1	2	3
50-59.....	0	1	2	3	1	1	2
60-69.....	0	0	1	1	0	0	0
70+.....	4	0	0	4	2	1	3
Total.....	4	1	4	9	4	5	9

SUMMARY

A question has been introduced concerning the value of stellate ganglion block as a treatment for focal cerebral vascular disease and it is pointed out that the literature does not contain enough careful observations concerning this matter to make an answer to the question possible. A method for observing and caring for patients with this disease is described. This method makes possible ultimate comparison of the results of different types of treatment. A preliminary report is made concerning observations of 87 patients—60 without stellate block and 27 with it.

TABLE 4.—*Residual Motor Defects Two Weeks After Cerebral Infarction in Two Groups of Patients*

	No Stellate Block Done									Stellate Block Done									
		Monoparesis, Grade				Hemiparesis, Grade						Monoparesis, Grade				Hemiparesis, Grade				
Age	Normal	1	2	3	4	1	2	3	4	Died	Normal	1	2	3	4	1	2	3	4	Died
39.....	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0
40-49.....	1	0	0	0	0	0	2	1	1	0	0	0	0	0	0	1	1	1	0	1
50-59.....	2	0	0	0	0	2	1	5	1	0	0	1	0	0	0	0	0	0	1	1
60-69.....	2	2	1	0	0	5	3	2	5	0	1	0	0	1	0	0	3	1	3	0
70+.....	1	0	0	0	1	1	3	1	4	4	0	0	0	0	0	0	0	0	1	2
Total.....	7	2	1	0	1	9	9	9	11	4	1	1	0	1	1	1	5	2	5	4

COMMENT

The number of patients observed—60 without stellate block and 27 with it—is insufficient to permit valid statistical analysis of the results. Dr. Joseph Berkson of the section of biometry and medical statistics estimates that there must be 150 observed patients in each group before an accurate and final judgment can be made concerning the alleged benefit derived from stellate ganglion block. Thus far, the principal difference in the two groups of patients has been in mortality in simple cerebral infarction; the mortality rate has been 19% in those having repeated stellate ganglion block and 8% in those not receiving this treatment. Thirteen per cent of the group not receiving blocks were normal two weeks after the occurrence of infarction as contrasted to 5% of those receiving stellate blocks. The two groups of patients are comparable from the standpoint of the severity and extent of the lesions. Hemiplegia developed in 55% of the patients receiving stellate ganglion block within 24 hours after the onset of symptoms, and 51% of the nonblocked group had this neurological sign in the same time period. In this report emphasis has been placed on the motor phenomena, but observations concerning such items as sensation and hemianopsia have also been recorded (though not included in the present paper). In most in-

TABLE 6.—*Summary of Results of Treatment Two Weeks After Infarction in All Patients*

	No Stellate Block	Stellate Block
Infaret		
Total.....	53	21
Died.....	4 (8%)	4 (19%)
Improved.....	32 (60%)	8 (38%)
Normal.....	7 (13%)	1 (5%)
Embolus		
Total.....	3	6
Died.....	1 (33%)	5 (83%)

The number of patients is inadequate for the development of conclusions, but thus far we have been unable to confirm the claims of remarkable improvement of patients with focal cerebral vascular disease, as reported by a number of authors. Thus far, the results of this treatment have not been better than those obtained in a group of patients not receiving stellate ganglion block.

ARTERIALIZATION OF THE CORONARY SINUS

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and
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Coronary atherosclerosis apparently is an increasingly common disease in American civilization. While it has been recognized as a disease entity since antiquity, in only the last several years has it come into clinical prominence.[1] Only in the last few years has a serious attempt been made to determine its cause. Angina pectoris, coronary occlusion, myocardial infarction, and myocardial aneurysm formation are all end-stage phenomena of this condition. They are all evidences of the basic underlying process: arteriosclerosis affecting the larger and the medium-sized (muscle-coated) coronary arterial branches. This is an inevitably progressive obliterative and occlusive process, which must, in time, greatly narrow and eventually obliterate this entire arterial system. Death may interrupt the course at any time owing to the accidents of acute myocardial infarction, ventricular fibrillation, or congestive heart failure. Certain rare persons, however, have survived after complete obliteration of both main coronary arteries. This phenomenon indicates that normal auxiliary or compensatory mechanisms exist that may greatly delay, or even completely overcome the effects of progressive destruction of the normal coronary arterial blood supply.[2]

The possible mechanisms capable of augmenting or replacing the normal coronary supply are: (1) the development of additional vascularity at the base of the heart and, in adhesions, occurring between the heart surface and adjacent extracardiac tissues (usually the pericardium) and (2) the postulated, but unproved, overdevelopment of normal intracardiac openings permitting direct passage of blood from the chambers into the deeper myocardial sinuses. In addition to these two possible sources by which the blood supply to the myocardium can be actually increased, there exists an important mechanism whereby blood from remaining unaffected arterial branches of the coronary tree may be distributed to areas deprived of their normal arterial flow. This is the enlargement of normally existing, but minute, intercoronary vascular communications. When these collateral channels become sufficiently enlarged owing to the demands of the ischemic myocardium or another suitable stimulus, given sufficient time, they are capable of completely replacing the circulation abolished by complete occlusion of a major coronary arterial branch. Thus, they are of great importance in permitting recovery from the effects of acute coronary thrombosis. In experimental animals, previously established enlargement of the intercoronary communications can completely prevent the development of myocardial infarction or death after ligation of even the anterior descending branch of the left coronary artery; however, these vascular channels become less and less effective in human clinical cases as atherosclerosis progresses to a point of extreme diminution in the total myocardial blood supply.

The medical management of these cases, while better than at any time in the past, still leaves much to be desired. Prevention of coronary atherosclerosis in human beings cannot, with any certainty, be presently achieved. It is questionable whether the advance of this process, once initiated, can be interrupted or reversed. Many of these patients remain partially incapacitated by anginal distress and by the implied threat of sudden death. Surgeons have, in the past, attempted to stimulate or produce additions to the total myocardial vascularity. Thus, Beck,[3] O'Shaughnessy,[4] and others have sutured adjacent vascular tissues (omentum, lung, pericardium, and pectoral muscle) to the heart. Beck has even removed the epicardium with a burr in an attempt to eliminate this possible anatomic barrier between adequate vascular union of the graft and the myocardium. Thompson and Raisbeck [5] have instilled powdered talc into the pericardium in an attempt to produce vascularized adhesions between the pericardium and epicardium. Schildt, Stanton, and Beck,[6] after studying 28 possible pericardial irritants (including talc and phenol), chose powdered asbestos for this purpose. They felt that this substance also greatly stimulated the development of the intercoronary communications.

In the average person it is questionable how much of the normal coronary arterial flow can be replaced by such surgically produced extracardiac anastomoses. While this slight additional myocardial vascularity might afford a certain amount of protection against death following a sudden arterial occlusion, and perhaps a measure of additional comfort or even of prolongation of life, it cannot offer restoration of health to the point where normal life and activity might be contemplated. For these reasons, Roberts [7] suggested that arterialization of the coronary sinus be tried in an attempt to add a large, new source of arterial blood to the myocardial circulation. Beck and co-workers [8] have conducted an extensive program of animal experimentation and finally of clinical trial in keeping with this suggestion. It now appears that these efforts were well founded.

In some recent anatomic studies two of us (R. C. T. and A. W. A.) observed a cardiac vascular pattern in dog and man that would appear to be compatible with the

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The patients operated on at St. Michael's Hospital are included with the permission of Dr. Anthony Crecca, Chief of Thoracic Surgery.

The bibliographic references have been omitted from THE JOURNAL because of lack of space; however, they are included in the authors' reprints.

From the Divisions of Surgery, Medicine, and Anatomy, Hahnemann Medical College and Hospital, Philadelphia, and the St. Michael's Hospital, Newark, N. J.

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objectives and surgery of the Beck procedure (arterialization of the coronary sinus).[9] It has been demonstrated that, normally, the venous tributaries of the coronary sinus drain the left heart (fig. 1). These venous radicles are several times more abundant than corresponding branches of the left coronary artery (fig. 2). This extensive venous network provides anatomic continuity with

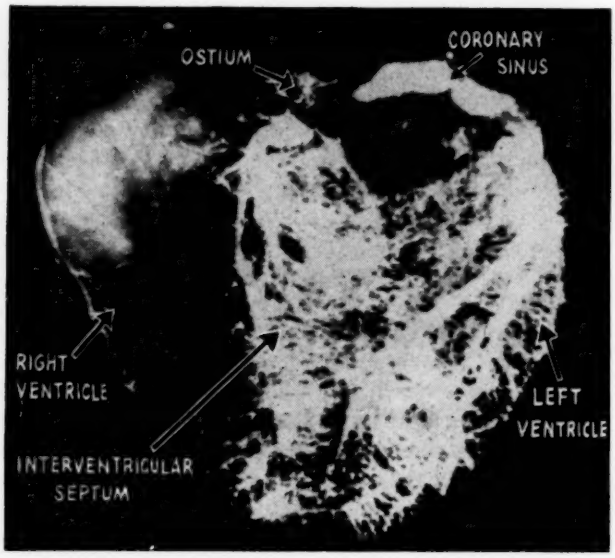

Fig. 1.—Coronary sinus injection revealing extensive venous system of left ventricle and interventricular septum. There is little normal communication with the right ventricular veins (courtesy of Wistar Institute of Anatomy and Biology).

the myocardial capillary bed of the left heart and the interventricular septum following arterialization of the coronary sinus.[10]

Within the myocardium, it was possible to show conclusive evidence of collateral channels and anastomoses between tributaries of the coronary sinus, myocardial sinuses, Thebesian vessels, and the lumen of the right atrium. It is believed that the latter channels serve as major drainage routes back to the right atrium following the second stage of the Beck operation. Furthermore, these channels, in addition to the residual outflow through the partly closed ostium of the coronary sinus, may afford a safety valve, or overflow mechanism, to prevent myocardial engorgement that might otherwise accompany retrograde arterial flow in the tributaries of the coronary sinus. It is interesting to note that when this safety mechanism is partly eliminated, as by complete experimental closure of the ostium of the coronary sinus, the result is subepicardial hemorrhage and venous engorgement. As originally pointed out by Beck, "We believe that there is an optimum flow to the sinus and that there is a ceiling for inflow which should not be exceeded." More recently, in referring to the valve of this safety mechanism, McAllister, Leighninger, and Beck [9] stated, "The cardiac venous tree is one of definitely limited distensibility."

Our antemortem and postmortem studies of dog hearts following this surgical procedure have corroborated the finding of Beck,[8a] namely, that there are a variable number of epicardial anastomoses between the anterior cardiac veins of the right ventricle and the coronary sinus system. Such anastomoses become particularly prominent postoperatively in the injected hearts of animals (fig. 3 and 4). Beck suggested ligation of these venous anastomoses to prevent the arterial blood in the coronary sinus from entering the right atrium, thus, bypassing the capillary bed. We feel such postoperative anastomoses may prove most beneficial, for they convey arterial blood to that part of the right ventricle that would otherwise be devoid of an adequate blood supply. How much arterial blood actually reaches the myocardial capillaries of the right ventricle and how much escapes through the anterior cardiac veins into the atrium are questions that must await further investigation.

At present, anatomic studies on experimental animals indicate that the Beck procedure may offer beneficial results in the presence of coronary atherosclerosis. The epicardial as well as the intramural venous channels are capable, within certain limits, of adjusting to arterial pressure without myocardial engorgement or thrombosis. These venous channels also provide avenues for the return of myocardial blood to the chambers of the heart (fig. 5). This two stage surgical procedure is always attended by some degree of production of epicardial adhesions to the pericardium and adjacent mediastinal structures. Such adhesions are accompanied by enlargement of existing, as well as by the development of new, anastomoses between the branches of the coronary arteries, pericardium and vasa vasorum of the vascular graft, and the aorta and pulmonary vessels. The authors today are unable to present quantitative evidence as to the amount of arterial blood that reaches the capillary bed after arterialization of the sinus. It is not unreasonable to assume that the arterialization procedure may

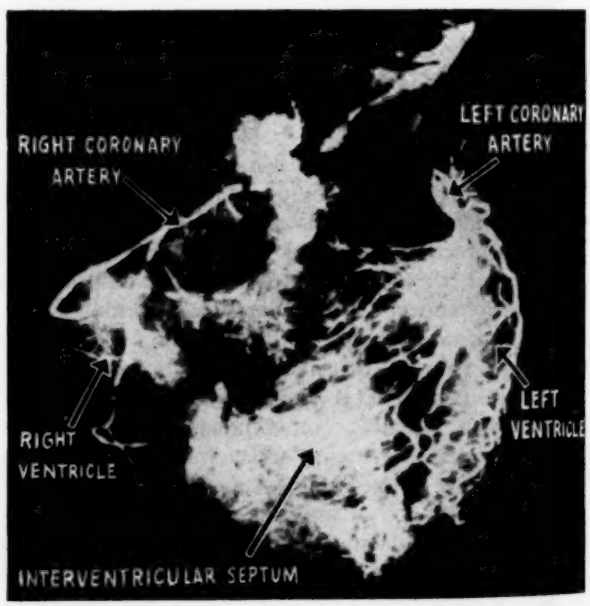

Fig. 2.—Coronary arterial injection revealing much less extensive arterial vascular system (courtesy of Wistar Institute of Anatomy and Biology).

create a partial back pressure on the capillary bed and thus slow the circulation time through these minute endothelial tubes. Thus, the tissues would be benefited, for any blood that entered the capillaries would be more completely deoxygenated. While our progress to date has been most gratifying, we believe that some of these perplexing anatomic problems can only be answered by the

expanded research program that is now in progress. It is regrettable that so little study has been devoted to the myocardial capillary bed, for it is from such research that the final answers must come. This particular aspect of the coronary circulation is being actively pursued in our institution by Drs. Curry and Lehman and some of us (A. W. A., W. N., R. C. T., and C. P. B.).

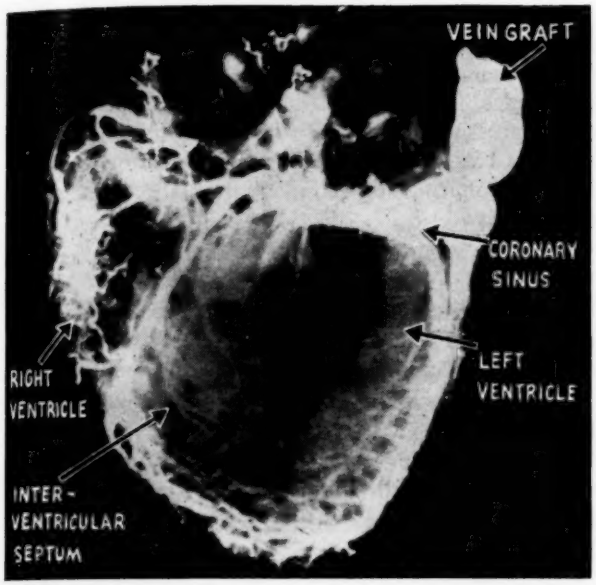

Fig. 3.—Closed heart of animal injected by way of the graft six weeks after Beck operation.

Physiological studies, and especially physiological studies of the circulation in animals subsequent to arterialization of the coronary sinus, are few up to the present time. Eckstein has, so far, been the chief physiological investigator. The most interesting of his studies to us has been a comparison in collaboration with Leighninger [11] of the retrograde blood flow from the distal segment of the divided left circumflex coronary artery in normal animals and in those subjected to the Beck operation. The normal retrograde flow in animals subjected to division of the left circumflex coronary artery is about 2.5 cc. of arterial blood per minute. This undoubtedly represents blood derived from the normally existing intercoronary vascular communications and, thus, from the remaining intact coronary arteries. When a vascular graft is placed between the descending aorta and the unligated coronary sinus, the sinus pressure becomes considerably elevated (to about 50 mm. Hg). The retrograde blood flow from the divided coronary artery then increases to about 7.5 cc. of essentially venous blood. When this experiment is conducted on an animal prepared by arterialization of the coronary sinus three weeks previously, it is found that after ligation of the normal terminus of the sinus the retrograde blood flow from the divided coronary artery amounts to 20 cc. of venous blood. Unquestionably, this would seem to represent mainly arterial blood from the graft, which has traversed the sinus and its tributaries to enter the myocardial capillary bed. After giving up its oxygen to the contracting muscle fibers, it has then entered the ramifications of the divided circumflex arterial branch to escape into the collecting canulla. It is notable, however, that at this time, after the arterialization of the sinus, the retrograde flow when the graft is clamped off amounts to 5.6 cc. of arterial blood. This suggests that an appreciable enlargement of the normally existing collateral channels has been brought about by the increased pressure in the coronary sinus. Indeed, with the passage of time, this retrograde flow of arterial blood increases until, after three months, it is equal to the retrograde flow with the graft open (20 cc. per minute). Thus, the above work would indicate that the retrograde flow would be of significance for only about three months in the experimental animal. Undoubtedly, in humans, with a markedly diminished total coronary arterial flow, the graft would continue to be of great functional significance.

As a result of these investigations by Beck and coworkers,[8] and by our own group,[12] we have formulated certain working hypotheses or concepts. While they represent a considerable departure from standard cardiological reasoning, they are based on careful consideration of available anatomic, physiological, and clinical observations both in normal animals and in human patients subjected to the Beck procedure. At the risk of possible oversimplification, it may be said that the myocardium, especially that of the left ventricle, is a "marsh" or "swamp" of blood confined between the endocardium and epicardium. The blood is contained within the lumina of a vast mesh of capillaries and immediately continuous venous sinuses covered by a single layer of endothelial cells. The muscle fibers and conducting and supporting elements run through this swamp in close association with the vascular elements deriving oxygen and nutriment from them while excreting carbon dioxide and other wastes into them. Fresh arterial blood is constantly supplied to this swamp by the branches of the coronary arterial system. The exhausted blood is drained off by two fairly separate and distinct venous systems: approximately 40% by the deep or Thebesian system and 60% by the superficial venous (anterior cardiac veins and coronary sinus) system. The Thebesian system drains essentially into the right and left atria by numerous small openings. The coronary sinus empties into the right atrium through a single large orifice (fig. 6).

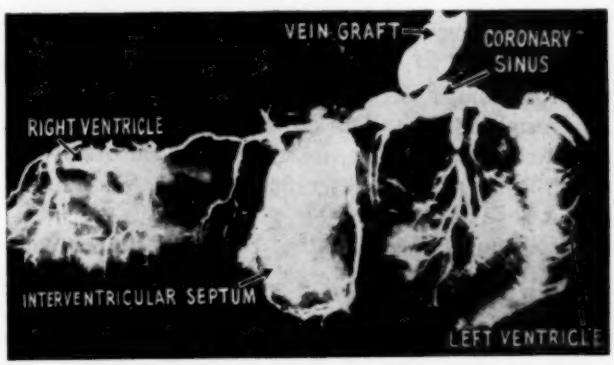

Fig. 4.—Opened heart, shown in fig. 3, showing increased communication of the coronary venous system with the right ventricular veins.

Louis Gross [13] showed in 1937 that the coronary sinus could be sacrificed by ligation without causing death or permanent impairment in health to the experimental animal. Fauteux [14] showed that the sinus could be similarly sacrificed in human beings without untoward effect. It is, therefore, evident that the Thebesian venous system is

capable of expansion or dilatation to the point of adequacy for drainage of the entire myocardial bed. Therefore, the coronary sinus and its tributaries may be considered as an additional, or largely expendable, system of vascular communications to the myocardial capillary bed.

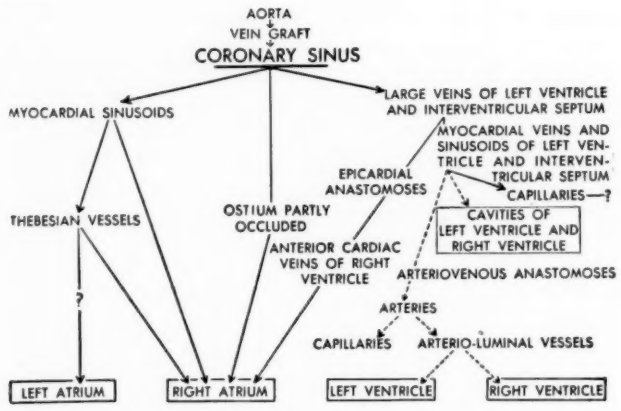

Fig. 5.—Schema for blood flow.

When atherosclerosis progresses to the point of great diminution in the lumina of the remaining coronary arterial supply, replenishment of the blood in the myocardial swamp necessarily becomes slowed. For a time, the myocardial fibers can compensate by more extensive utilization of the oxygen in the depleted blood; however, a point comes when the myocardium must contract under conditions of severe anoxia. Any undue physical exertion must then produce the phenomenon of angina pectoris with its attendant risk of sudden ventricular fibrillation (fig. 7). Under such conditions of coronary arterial insufficiency, possible help by purely medical means is limited; however, the surgeon, by utilizing the "expendable" coronary sinus and its branches, may transport arterial blood by reverse flow back into the very capillary bed where the myocardial fibers can use it. This is accomplished by a two stage operation: The first step consists of anastomosing the aorta to the coronary sinus by means of a vascular graft. The second step is a nearly complete obstruction of the ostium of the coronary sinus, thus causing the arterial blood to flow backward into its tributaries (fig. 8). The two stage technique is necessary to permit adjustment of the myocardial vascular bed before permitting the full flow of additional blood from the graft to distend it. When such precautions have not been taken, myocardial congestion and subepicardial hemorrhages have occurred.

It will now be evident that by the Beck procedure actual replacement of a large portion, or perhaps even all, of the normal coronary arterial flow is aimed at, if the atherosclerosis should progress to that point. One can see why such patients might be expected to have a great degree of improvement after the successful completion of such surgery. Naturally, many questions and objections must be raised regarding such a revolutionary concept and its practical implementation. Many of them can be resolved only by the passage of time; however, the theoretical soundness of the procedure, and the evident, gratifying, clinical improvement manifested by some of Beck's patients, as well as his own encouragement greatly influenced on the establishment of a program of surgery for coronary arterial disease in February, 1951, at the Hahnemann Hospital in Philadelphia and the St. Michael's Hospital in Newark, N. J. The patients reported here were all operated on at these hospitals either by Dr. Beck or by one of us (C. P. B.).

MEDICAL CONSIDERATIONS

Selection of Patients.—Certain criteria for the selection of patients have been established. These arbitrary standards undoubtedly will be modified by further clinical experience. The basic requirement for surgery is major or progressive atherosclerotic disease of the coronary arteries. The diagnosis must be established beyond question and confirmed by definite abnormality in the electrocardiogram.

Liability resulting from coronary artery disease varies. Functional impairment is the most important of the many factors influencing the decision to operate. Surgery should be performed only where a significant disability exists. On the other hand, it should not be considered when the disease and incapacity are so advanced that survival or benefit cannot be reasonably expected. Perhaps in the future, the very uncertainty of coronary artery disease, with its implied threat of sudden death, may be the primary indication for the operation. For the present, however, the reasons for surgery must be carefully evaluated. In the relatively short medical history of coronary atherosclerosis, certain facts have emerged as prognostic guides. These must be utilized to establish proper indications and contraindications as to operability. Our experience with the selection of cases for mitral commissurotomy has proved that classification schemes for the selection of patients are too inelastic to be practical. Few patients are entirely acceptable or unacceptable for surgery. Proper selection depends on the recognition of established indications and contraindications and an appraisal of their relative importance in a particular candidate.

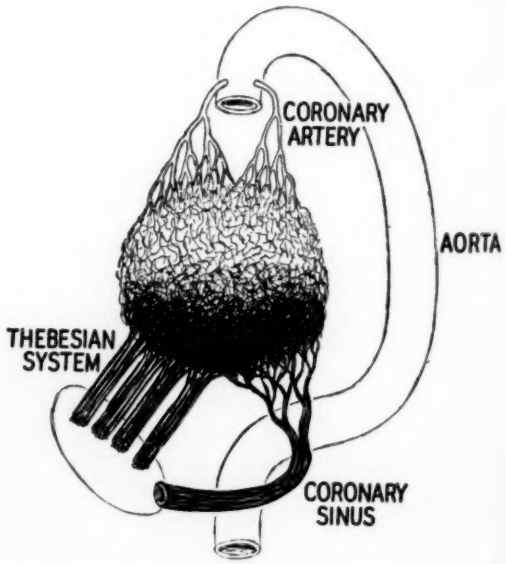

Fig. 6.—Concept of normal coronary circulation. Shaded area represents capillary blood depleted of oxygen.

Difficulty is generally experienced in objectively estimating the degree of incapacity resulting from coronary artery disease. It is well known that the frequency and severity of angina pectoris may be altered by environmental temperature, humidity, psychic trauma, fatigue, and other obscure factors. There is a great need for an

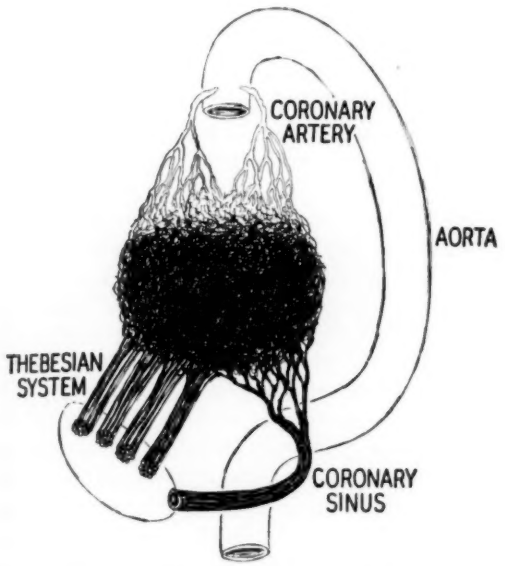

Fig. 7.—Concept of diminished coronary circulation owing to atherosclerosis.

exact means of determining coronary function under specific work loads. Until that method is available, the number of glyceryl trinitrate (nitroglycerin) tablets used during a usual day represents a reasonable means of estimating functional impairment. When glyceryl trinitrate requirements increase or remain significantly high in spite of adequate medical care, major disability is present. The same conclusion may be reached when gainful employment is impossible because of the frequency or severity of attacks of angina pectoris. Angina decubitus is an unmistakable indication of major interference with coronary blood flow. Although definite abnormalities in the electrocardiogram are a basic requirement for surgery, the various changes cannot be rigidly classified according to their importance. Those alterations that appear in the tracing constantly probably indicate more extensive pathological changes than those appearing after exercise. Although the type of abnormality may not be of prognostic value, it is essential that the changes remain static. The problem of rapidly changing patterns indicative of progressive myocardial damage will be discussed under contraindications.

Indications.—Those patients who satisfy the basic requirements for arterialization of the coronary sinus may be grouped into ideal, satisfactory, and unacceptable candidates. Basically, age, the number of myocardial infarctions, the functional integrity of the myocardium, blood pressure, heart size, and associated conditions determine this grouping. The significance of symptomatic coronary artery insufficiency is altered considerably by the age of the patient. The presence of the disease before the age of 40 is a major indication for operation, for it must represent both an abnormal arterial senescence and an adequate adjustment of collateral circulation. This probably holds true through the entire fourth decade. The ideal patient is 50 years of age or younger. At this age level, all other factors being equal, the need and promise of benefit is greatest. From the fifth decade upward, age ceases to become a major indication. Patients may be still acceptable at 55 years, but beyond that age acts as a definite deterrent.

The presence of a previous myocardial infarction is not a requirement for surgery; however, it lends significance to the effort syndrome and increases the advisability of surgery. The ideal candidate has suffered a single myocardial infarction at least six months prior to operation. Normal blood pressure and normal heart size are found in all ideal patients. A patient may remain a satisfactory risk with blood pressure levels as high as 180 mm. Hg systolic and 100 mm. Hg diastolic, particularly if the elevated pressure is evanescent. This, likewise, remains true when heart size is increased to no more than 10% of normal values. The ideal candidate not only satisfies all requirements for surgery but offers no contraindication. In contrast, the satisfactory patient presents one or two minor contraindications. The patient that is unacceptable either does not have the basic requirements or offers a major contraindication. It is most probable that a greater number of acceptable patients are to be found in the satisfactory, rather than the ideal, group.

Contraindications.—A recent myocardial infarction is a major contraindication. The operation should not be performed after infarction until six months have elapsed. Care must be taken that a severe, easily initiated effort syndrome does not indicate a developing infarction. When serial electrocardiograms show rapidly progressive

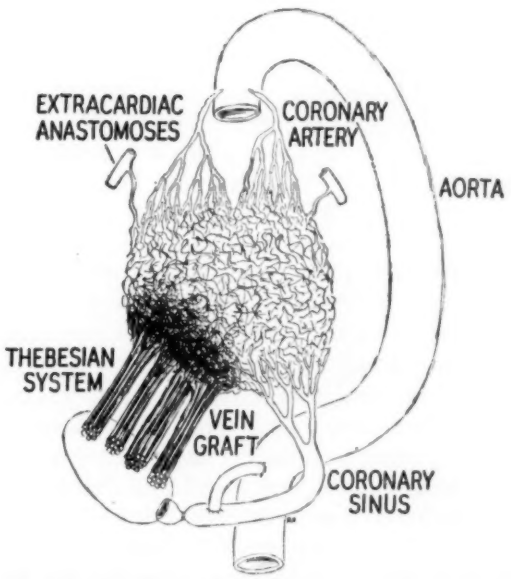

Fig. 8.—Arterialization of coronary sinus and retrograde flow into capillary bed.

myocardial damage, the operation must be deferred until the pattern has become fixed for four to six months. This applies even though there may have been no change in the patient's symptoms. The occurrence of two myocardial infarctions within one year is a major contraindication. This probably holds true for all patients with multiple infarctions, regardless of the time interval.

The presence of congestive heart failure is an absolute contraindication. This is equally true when gallop rhythm is present. Heart failure that has responded to medical treatment remains a major contraindication. It would appear that the degree of myocardial damage usually found in patients who have suffered congestive failure on the basis of coronary artery disease is too extensive to be aided by operative interference. It is equally doubtful that such patients could withstand the rigor of the surgical procedure. Blood pressure values that remain beyond 180 mm. Hg systolic and 100 mm. Hg diastolic are held as firm contraindications. This, likewise, is true where the heart size is increased beyond 10% of predicted values.

An important major contraindication is an age level beyond 55 years. Although this is an arbitrary standard and may disqualify a large number of patients with specific requirements and need for surgery, it appears best to maintain that limit for the present. It remains apparent that, in many instances, chronological age is a poor indication of tissue senescence. In unusual patients, the tissue age may belie the chronological years, even where severe coronary artery disease is present.

For technical reasons, a markedly calcified aorta must be accepted as a distinct contraindication. Certain associated diseases may serve as minor contraindications. These would include emphysema, bronchiectasis, diabetes, and marked obesity. Renal failure obviously would gravely compromise the surgical risk. Such issues as recent or multiple infarctions, congestive failure, gallop rhythm, gross cardiac enlargement, or severe hypertension cannot be counterbalanced by any major indication for surgery. These patients are the least likely to survive, or, if they do, the least likely to benefit.

Preoperative Management.—Patients who have been chosen with care for surgery rarely present difficult problems in preoperative management. A careful history will reveal the circumstances under which anginal seizures occur. Every attempt should be made to avoid duplicating these situations during hospitalization. Where necessary, activity is restricted to a minimum; emotional tension is, likewise, reduced as much as possible. In this regard, the period of laboratory and clinical investigation should be regulated according to the patient's tolerance and not to an inviolate routine. Brief words of explanation often sustain a patient through the most trying type of study.

Glyceryl trinitrate is an invaluable drug, and there is no contraindication to its use in the preoperative period. Occasionally, the so-called coronary vasodilators may aid in the control of frequent cardiac pain. Rest and mild sedation, however, appear to be the most effective measures before surgery. Major arrhythmias are unusual in this group of patients. Premature ventricular systoles and the implied threat of ventricular fibrillation is best controlled by oral administration of quinidine or procaine amide ("pronestyl"). These drugs are discontinued at least 24 hours before surgery, since they may potentiate the effect of the intravenously administered procaine that is used routinely during the operative procedure. There is no purpose in digitalization prior to surgery. Indeed, digitalis may be harmful in initiating troublesome arrhythmias or conduction defects. In cases in which this drug has been given in the past, it should be discontinued unless a pressing indication for its use is still present.

Postoperative Management.—The major cardiac sequelae that develop after the first stage procedure are a persistent sinus tachycardia, premature atrial contractions, or atrial fibrillation. The sinus tachycardia requires no specific therapy. It does not respond to digitalis and usually subsides on the fourth or fifth postoperative day. Frequent premature atrial contractions usually precede atrial fibrillation. The latter, however, has occurred with no previous indication of atrial irritability. Where the ventricular response to atrial fibrillation is uncommonly rapid and the integrity of the circulation is threatened, or when congestive failure actually develops, digitalis or any of the related compounds may be given. If failure is not present, however, the drug should be withheld if possible. The rhythm will revert spontaneously during the first week. Occasionally, quinidine has been given under these circumstances, but the effect is questionable. One patient continued to show evidence of atrial irritability for two weeks after both the first and second stages, even though full doses of quinidine were given.

Oxygen is a routine medication for the first 24 hours. It is rarely required for a longer period of time. The patient is encouraged to cough from the start. Retained secretions are promptly treated by aspiration, bronchoscopy, or tracheotomy as indicated. The patients are fed a soft diet within 24 hours and are encouraged to feed themselves as soon as is feasible thereafter. This applies to either stage of the operation. Attention to bowel function is usually deferred until the third day, when a warm saline enema may be given if necessary. Ambulation depends on the febrile reaction, cardiac rate, and the general condition of the patient. Generally, it is not attempted until the 7th to 10th postoperative day. Frequent leg movements in bed can alleviate the discomfort and inherent danger of too early activity in the cardiac patient. When walking is finally permitted, it is regulated to the patient's tolerance and not to a set routine. Antibiotics are routinely used. Penicillin and oxytetracycline ("terramycin") have been favored. There is, however, no need for anticoagulant therapy. Patency of the graft apparently depends on technical factors and not on the incoagulability of the blood. The routine use of aminophyllin by vein may have a beneficial effect on the coronary circulation without greatly increasing cardiac output or the damage of arrhythmia.

Immediately after the first stage operation, a to-and-fro bruit may be heard at the second left interspace anteriorly or high in the interscapular area to the left of the spine. Even though the graft remains patent, this murmur may become considerably diminished on the third or fourth day. It then generally reappears and remains constant. Tilting the patient to the right at times increases the intensity of the sound. It is generally best heard after a full expiration. No other murmur except a transient friction rub develops as the result of the surgery. The postoperative period is usually well tolerated. Patients have shown no reluctance to enter the second stage after successfully withstanding the discomforts of the first.

Postoperative Evaluation.—Since the major requirement for surgery at the present time is the functional impairment of the patient, the most significant post-

operative evaluation is the degree of improvement in functional capacity. For the immediate period following surgery, there is an expected limitation in activity, which is unrelated to the coronary circulation. An evaluation during that time is valueless. Generally, within 12 weeks, the patient may be encouraged to engage in ordinary activity and an early comparison is made with the preoperative clinical state. The number of glyceryl trinitrate tablets necessary serves as a reasonably accurate guide provided that all other factors remain constant. In cases in which glyceryl trinitrate is not necessary, the amount of effort required to precipitate the pain of angina pectoris serves as an adequate means of appraisal.

The electrocardiographic pattern, thus far, does not appear to serve a significant role in determining the degree of improvement or lack of effectiveness of the surgical procedure. The retrograde flow of arterial blood in the venous channels may produce, in certain patients, bizarre alterations in the T-waves of all leads. In others, no such change is seen. Functional response, apparently, is independent of these changes. The explanation of such alterations and their probable cause remain to be clarified on further study. They are not dissimilar in many instances to those noted in experimental animals. However unsatisfactory a functional appraisal may be, it does become more meaningful when applied over a significant period of time under controlled conditions.

PRESENT SURGICAL TECHNIQUE

This is an extension of the original technique developed by Dr. Claude Beck and modified as a result of further operative experience in the performance of this procedure by him and by one of us (C. P. B.).

First Stage.—The patient is anesthetized, using an endotracheal technique. Thiopental (pentothal®) sodium and procaine, administered intravenously by the method of Keown, Ruth, and Grove,[15] offers many advantages, not the least of which is its nonexplosibility, permitting the use of the high frequency current for hemostasis. The patient is postured on the operating table in the true lateral position, and a long left lateral incision is made. The seventh intercostal space is widely opened. The inferior pulmonary ligament and any interfering adhesions are divided, and the lung is retracted upward. The pericardium is widely opened, and the coronary sinus is exposed to its termination in the right atrium. The distal extremity of the sinus is partially mobilized and is encircled by a double suture of white orlon® (plastic) material. This suture is not tied but is rolled up and attached to the inferior portion of the pericardium by a fine suture of black silk. Two parallel, fine, arterial silk sutures (traction sutures) are placed longitudinally 3 mm. apart in the most prominent and accessible portion of the coronary sinus. They must actually enter the vascular lumen as indicated by free bleeding from the stitch holes. Otherwise, the sinus wall may tend to separate into layers, seriously impairing the chances of obtaining a satisfactory anastomosis. A curved, specially prepared Beck sinus clamp is now applied to the sinus, excluding the portion of the wall that contains the traction sutures from the remaining lumen. A 6 to 8 mm. longitudinal incision is now made in this isolated portion of the vessel, midway between the sutures.

Using a valveless segment of an autogenous vein graft, or preferably a segment of the left subclavian artery, an end-to-side anastomosis is performed between the graft and the coronary sinus (fig. 9). A simple running suture of 00000 arterial silk, interrupted by four stay sutures, is most satisfactory. The sinus clamp is removed, establishing the functioning anastomosis, and the graft is distally clamped with a bulldog clamp after flushing with a heparin solution. A segment of either the subclavian or the splenic artery may be used and seems to provide a superior vascular graft. The portion of the aortic wall just opposite to this anastomosis is partially mobilized. The aortic adventitia is not removed.[16] A Beck aortic clamp is applied, excluding a portion of the aortic lumen, while permitting continued function of the rest of the vessel. A 6 mm. ovoid opening in the aorta is produced by excising an elliptical piece of the aortic wall. The graft is shortened to a suitable length, and the free end is anastomosed end-to-side to the aortic opening, using a continuous everting mattress suture of arterial silk (fig. 10).

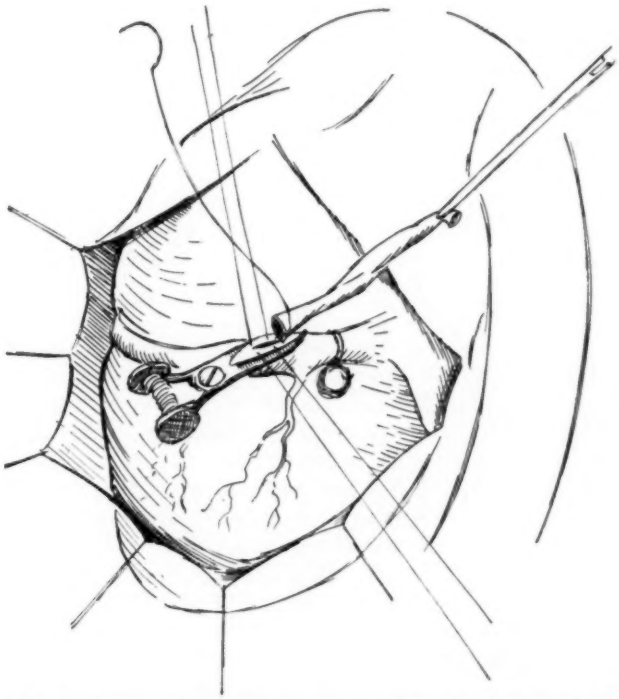

Fig. 9.—Anastomosis of graft to coronary sinus after placing orlon® suture loosely about sinus near ostium.

After completion of the aortic anastomosis, the bulldog and then the aortic clamp are removed, permitting a good flow of arterial blood into the coronary sinus. This produces a bright red color in the graft and a vigorous continuous thrill in both the graft and the distal portion of the coronary sinus. In dogs and in persons without great diminution in coronary arterial flow, there is no backward flow nor extension of the red arterial blood into the branches of the coronary sinus; however, in persons with a greatly diminished coronary arterial circulation, the red blood may be seen to extend into and to pulsate within the visible tributaries of the coronary sinus. This effect can be greatly exaggerated by making traction on the orlon® sutures, momentarily blocking the outlet of the coronary sinus into the right atrium. All visible coronary

veins then turn bright red, because of retrograde arterial flow, causing the heart, as aptly described by Dr. Beck, to "light up like a Christmas tree."[17]

The pericardium is partially reconstructed, and the chest is closed in the usual fashion, using a multiple window intercostal catheter for water-seal drainage.

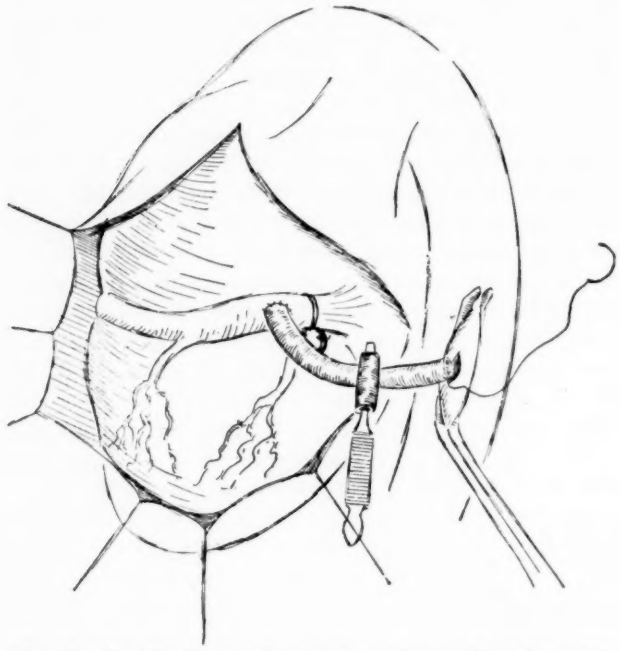

Fig. 10.—Anastomosis of graft to aortic aperture produced by excision of a button of aortic wall.

Second Stage.—The second stage is usually performed three weeks after the first and consists merely of reopening the old wound, mobilizing the pleural and pericardial contents, and tying the orlon® sutures down in such a way as to partially obstruct the normal outflow of the coronary sinus. This forces most of the contents of the sinus, including the added arterial blood from the graft, to escape by other routes. Part of this escape is afforded by direct communications with the anterior cardiac veins and the Thebesian system. We feel that an appreciable portion of the blood returns to the myocardial capillary bed, where it can nourish the myocardium. The depleted blood then largely escapes through dilated branches of the Thebesian vessels into the cardiac chambers. The actual partial obstruction of the sinus is carried out by tightly tying the mobilized orlon® sutures over a 2 to 3 mm. probe laid upon the sinus (fig. 11). After removal of the probe, the sinus lumen becomes reestablished but is reduced at this point to a 2 to 3 mm. passage. This opening is sufficiently large to prevent myocardial engorgement and congestion, but it is small enough to force much of the arterial blood from the graft back into the capillary bed. The procedure is terminated by closing the pericardium and thorax in the usual manner.

RESULTS

Two patients in this series did not actually have an anastomosis performed. In one patient, the coronary sinus was so delicate that it would not hold sutures for the anastomosis and was finally closed with difficulty. In the other patient, the coronary sinus was found to lie too far to the right of the aorta, making anastomosis technically impossible.

There were two deaths in this series, a mortality of 11.1%.* One of these was due to a sudden exsanguinating hemorrhage at the site of the aortic anastomosis on the seventh postoperative day. The aortic wall had seemed abnormal in this case at time of surgery, and anticoagulant therapy (bishydroxycoumarin) had, therefore, been instituted and carried out during the entire postoperative period. Whether the abnormal aortic wall (site of an arteriosclerotic ulcer as seen at autopsy) or the anticoagulant therapy had been responsible for the secondary hemorrhage is debatable. This was the only patient in the entire series treated with anticoagulants. The graft was patent. The other death occurred a few hours after surgery, apparently due to cardiac or circulatory depression. This patient had had two infarctions prior to surgery and presented a definitely enlarged heart. Today, we would exclude such a candidate from operative consideration.

A pleural empyema developed in one patient after the first operative stage. Adequate drainage resulted in reexpansion of the lungs and complete obliteration of the pleural space; however, a second stage operation was not performed, since this patient refused further surgery. In two patients, thrombosis of the anastomosis was disclosed at the time of the second operation. One of these was a case where the splenic artery had been anastomosed to the sinus. This patient was treated by immediate application of a vein graft between the aorta and the coronary sinus. The other was treated by opening the graft and removing the clot. The orlon® sutures were then tied down in each case. No subsequent stages were ever performed. Both patients have manifested subjective improvement. Of the remaining 11 patients, 4 were found at the second stage to have thrombosed grafts. They were treated by

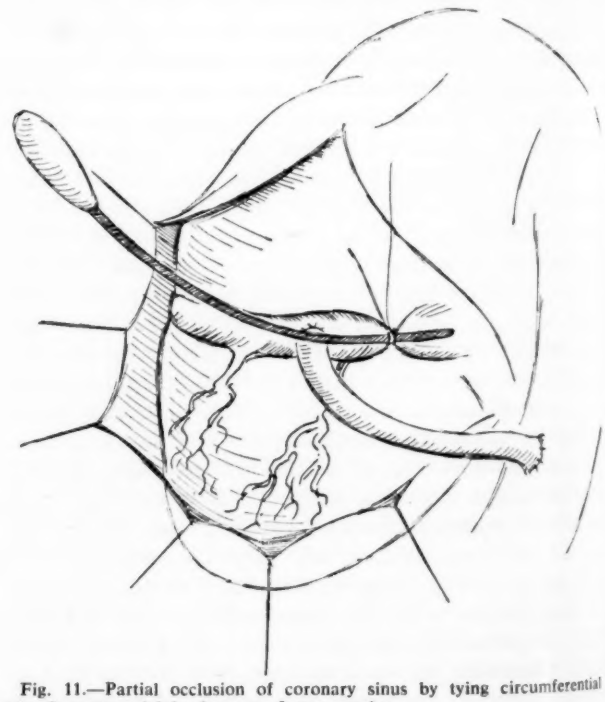

Fig. 11.—Partial occlusion of coronary sinus by tying circumferential orlon® sutures tightly down on 2 mm. probe.

* Since the submission of this paper an additional eight patients have been operated on with one death.

instillation of asbestos powder into the pericardium. One is slightly improved, two are unchanged, and one died six months after surgery of progressive disease.

The seven with patent grafts who had both operative stages have presented consistent evidences of improvement varying from what would seem to be "clinical cure" to moderate amelioration of symptoms. Our oldest patient was operated on only 15 months before the time of writing. Our evaluations were necessarily limited to essentially subjective evidences of improvement. By such subjective criteria, all seven were improved. Anginal pain was completely abolished in six who had previously presented it. Glyceryl trinitrate has been used by only one of the patients postoperatively. Work tolerance was so increased that all have been able to return to their former occupations. Stair climbing ability has increased in each case.

All patients express a great sense of well-being with improvement in appetite and general outlook. Perhaps part of this euphoria is due to a sense of confidence that potential subsequent coronary arterial occlusion will not produce myocardial infarction. Our first patient, who had suffered three distinct myocardial infarctions, has been converted from a cardiac invalid who took 100 glyceryl trinitrate tablets per week and was unable to walk 50 ft. without pain to a robust man who can with ease run at top speed completely around a city block. Such important subjective evidence of improvement leads us to feel that a great functional change has taken place in each person's cardiac action. More absolute indications of improvement must await other studies and the passage of much more time.

230 N. Broad St. (Dr. Bailey).

INTERPRETATION OF TESTICULAR BIOPSY

Warren O. Nelson, M.D., Iowa City

The steady increase in the use of testicular biopsy as a diagnostic procedure in instances of eunuchoidism and infertility has prompted this discussion of the preparation and histological interpretation of biopsy tissue. This procedure has been of real value in diagnosing testicular defects and in providing an intelligent basis for the institution of corrective measures or the withholding of treatment in cases in which the biopsy reveals a hopeless prognosis for fertility. As may be true of any procedure, however, the information it provides may be rendered seriously misleading by careless methods of preparation and inadequate attention to details of interpretation.

PREPARATION

It is not within the scope of this discussion to describe the surgical procedures involved in biopsy of the testis. Descriptions of the technique are available in various papers, which may be consulted for these details.[1] The question often arises whether both testes should be biopsied or whether tissue from only one will suffice. While the two testes of the majority of men present essentially similar histological pictures, differences are encountered often enough to make biopsy of both the preferred method if completely satisfactory analysis is to be assured. This is especially true in the case of an appreciable difference in testicular size or in men with obstructive azoospermia.

The biopsy specimen should be about the size of half a pea, unless the testes are very small. In such cases, smaller samples furnish adequate tissue, since the histological picture in very small testes rarely shows regional variation. Biopsies obtained by incision provide the only really satisfactory tissue, since suction and punch biopsies are almost certain to produce severe disturbance of the testicular architecture. The tissue should be placed in fixative immediately after excision. The importance of prompt and proper fixation cannot be emphasized too strongly. It is discouraging to attempt interpretation of a slide prepared from material that obviously had been allowed to dry before fixation or that had been fixed in ordinary solutions of formaldehyde. Many fixatives provide satisfactory preparations, but probably the most convenient and easily controlled agent for general use is Bouin's solution. Under no circumstances should the usual solutions of formaldehyde be used for biopsy tissue, except in cases in which the material is to be used for special studies, such as those designed to demonstrate lipids. The usual histological methods for dehydrating, embedding, sectioning, and staining are entirely satisfactory. The simple hematoxylin-eosin method provides acceptable staining for routine use, although the trichrome stains allow better differentiation of the connective tissue elements and are used almost as readily, even by the average technician.

INTERPRETATION

The diagnostic features that should be noted depend to some extent on the nature of the case. Thus, biopsy of a eunuchoidal person for the purpose of determining the type of eunuchoidism does not present the same diagnostic problem as the biopsy of a man whose problem is infertility. In the latter case the range of histological defects is considerably greater and often much subtler.

Eunuchoidism.—In eunuchoidal men the biopsy may be expected to reveal one of three characteristic pictures, according to the nature of the defect.[2] These three conditions and the frequency of their occurrence in a series of 148 patients are as follows: (1) hypogonadotropic eunuchoidism, 62%; (2) puberal seminiferous tubule and Leydig cell failure, 25%; (3) prepuberal

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Read before the Section on Urology at the 101st Annual Session of the American Medical Association, Chicago, June 10, 1952.

1. (*a*) Simmons, F. A.: Diagnosis and Treatment of the Infertile Male, Monographs in Surgery, edited by B. N. Carter, New York, Thos. Nelson & Sons, 1951, p. 267. (*b*) Nelson, W. O.: Male Infertility, in Endocrine Therapy, edited by M. Goldzieher, New York, Springer Publishing Co., 1952, to be published.

2. Heller, C. G., and Nelson, W. O.: Classification of Male Hypogonadism and a Discussion of the Pathologic Physiology, Diagnosis and Treatment, J. Clin. Endocrinol. **8**: 345, 1948.

testicular failure, 13%. Although these three testicular conditions are vastly different, the external appearance of the patients who have them, including secondary sex characteristics, may be identical. In each instance, the subject fails to undergo normal puberal maturation and presents a condition of undeveloped genitalia, scanty

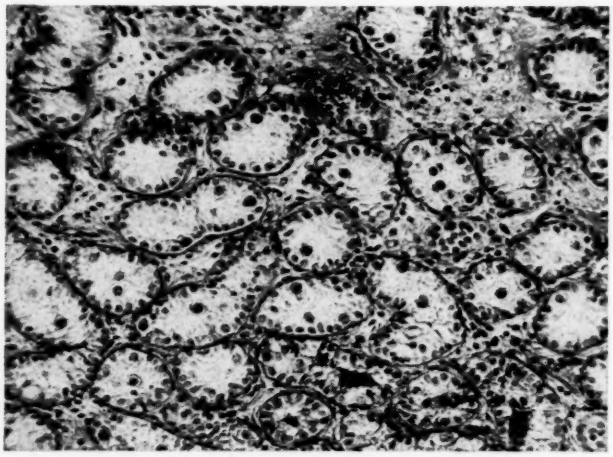

Fig. 1.—Photomicrograph of biopsy specimen from testis of a 20-year-old hypogonadotropic eunuchoid (× 150). The tubules are small, contain a few spermatogonia and undifferentiated Sertoli cells, and are typical of the prepuberal testis. There are no Leydig cells.

extremity and facial hair, usually scanty sexual hair, eunuchoidal body proportions, and the other stigmas associated with deficiency of androgenic hormone during the puberal period. The proper treatment for this defect is easily determined by examining a small sampling of the testes.

In hypogonadotropic eunuchoidism the testis presents an unmistakable picture, that of the prepuberal testis (fig. 1). The tubules are very small and contain only numerous undifferentiated Sertoli cells and lesser numbers of spermatogonia, with, as a rule, few or no primary spermatocytes. The intertubular areas lack the character-

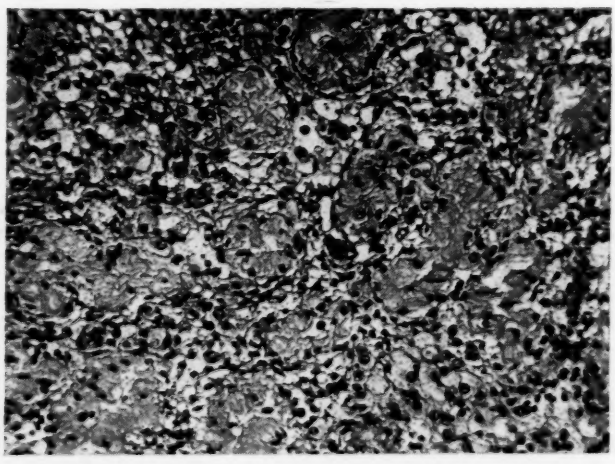

Fig. 2.—Photomicrograph of biopsy of specimen from testis of a 21-year-old eunuchoidal man with a diagnosis of puberal seminiferous tubule and Leydig cell failure (eunuchoidal variant of Klinefelter syndrome) (× 150). The tubules are completely sclerosed and normal Leydig cells are very rare, the majority of intertubal cells being undifferentiated or vacuolated elements.

istic Leydig cells but do contain numerous precursors of these cells. In this condition, the primary defect does not reside in the testis but in the hypophysis, which has failed to secrete adequate amounts of the essential gonadotropins. The indicated treatment, therefore, is the administration of gonadotropic hormones.[2]

In the case of puberal seminiferous tubule and Leydig cell failure (eunuchoidal variant of the Klinefelter syndrome), the biopsy specimen characteristically shows completely hyalinized tubules and Leydig cells atrophic in appearance and nonfunctioning (fig. 2). This condition is a primary testicular defect and apparently is due to testicular failure at the onset of puberty. There is no lack of pituitary activity; indeed, the urinary levels of gonadotropin are elevated, and treatment of the condition must depend on the administration of androgenic hormone. It should be noted that the so-called Klinefelter syndrome was first described in men whose testes fail late in puberty or postpuberally and who, consequently, have achieved a fairly mature sexual status. Only later was it recognized that the syndrome has several variants depending, it is believed, on the puberal age at which testicular failure occurred.

In the case of the less frequently observed prepuberal testicular failure, biopsy of the scrotal contents shows

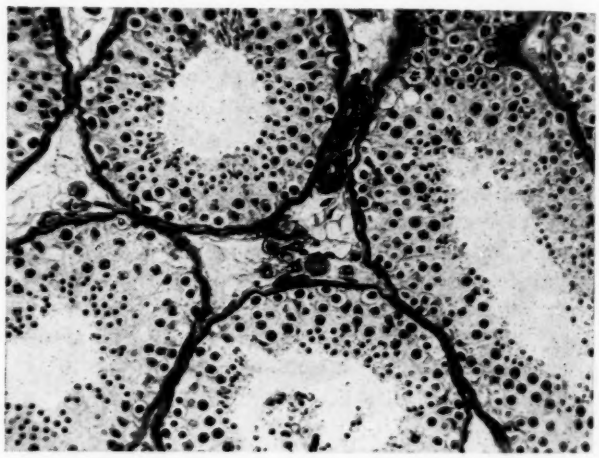

Fig. 3.—Photomicrograph of biopsy specimen from testis of a man whose seminal specimens showed azoospermia due to bilateral obstruction of the vas deferens (× 150). The histological condition of the testis is entirely normal; note the uniformity of tubular size, clearly evident lumens, orderly pattern of spermatogenesis, thin layer of peritubular connective tissue, insignificant intertubular areas, and small groups of Leydig cells.

either lack of testicular tissue (in some of these cases vas deferens or epididymal tissue is obtained) or tissue that can be interpreted as being the remnants of testes that atrophied early in life. In either case, the condition is one in which functional testicular tissue is absent as a result of congenital aplasia of the testes or early atrophy due to trauma, infection, or constitutional defectiveness. As in the case of puberal failure, there is no defect of the pituitary, and the only effective therapeutic procedure is the administration of androgenic hormone.[2]

Testis in Infertile Men.—Testicular biopsies from men whose complaint is infertility present a more complex problem of interpretation than instances of eunuchoidism, in which the histological differences in the several conditions are sharply defined. The testes of infertile men show several well-delineated defects, but in many cases, the morphological picture reveals a combination of defects or does not fall in any easily defined category.

Examination of the biopsy in infertile men should center on the following criteria:

Size and Degree of Maturation of the Seminiferous Tubules: The normal testis presents a picture of uniformity of tubular size and histological appearance (fig. 3). Clearly defined lumens should be present in the majority of tubules. Irregularities of size or state of maturity of the tubules and poorly defined or absent tubular lumens may be expected in the majority of infertile men (figs. 4 and 5).

Spermatogenic Activity: In the normal testis the tubules show orderly, progressive activity of the seminiferous epithelium. The various stages of the spermatogenic process occur in an orderly sequence and with little loss of immature cells through sloughing (fig. 3). Some variation in different tubules should be expected, since the spermatogenic process is of such a nature that its several stages do not occur simultaneously in all tubules. With a little experience, however, it is not difficult to make the proper allowance for this fact and to recognize cases in which significant abnormal changes are present. Of diagnostic importance are such conditions as a disorganized and jumbled appearance of the seminiferous epithelium, marked sloughing of cells into the tubular lumens (fig. 4), scarcity of germinal cells in the tubules (fig. 6), and the presence of many tubules that present the picture of spermatogenesis arrested at one of the early stages of the process (fig. 7).

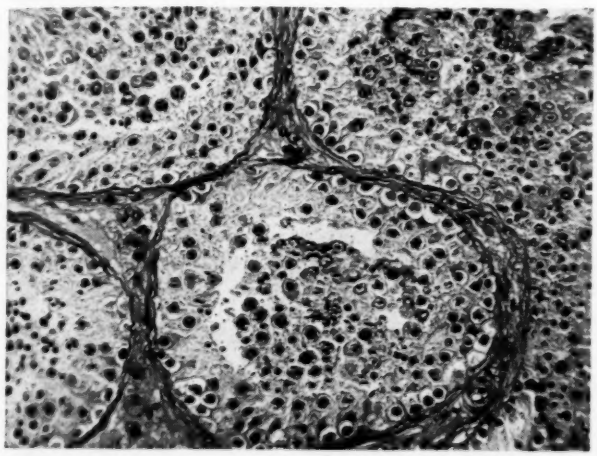

Fig. 4.—Photomicrograph of biopsy specimen from testis of a man whose sperm counts averaged 30 million per cubic centimeter (× 150) The tubules are large, and spermatogenesis is active but disorderly, with sloughing of immature cells into the lumens. Moderate peritubular fibrosis and moderate deposits of collagen are present.

Characteristics of Peritubular Connective Tissue: Normal tubules have a thin, homogeneous basement membrane immediately beneath the peripheral layer of germinal cells. Surrounding the basement membrane is a tunica propria, which should consist of a few lamellae of connective tissue fibers intermingled with cells (fig. 3). Although only rarely does one encounter testicular tissue in which a few tubules do not show peritubular fibrosis, the generalized appearance of thickening of the peritubular tissues is rarely present in testes of fertile men and is often present in infertile men (fig. 4, 5, and 8). This condition may involve the tunica propria only, in which case there is an increased number of fibers and cells, or it may be confined to a band of hyalinized material between the tunica propria and the basement membrane. In other cases the basement membrane may be involved in the hyalinized band, or both tunica propria and basement membrane may show the sclerotic changes. When such conditions are present in more than 10% of the tubules, fertility is almost certain to be reduced, since the seminiferous epithelium is damaged by the interposition of fibrotic tissue between it and its vascular supply.

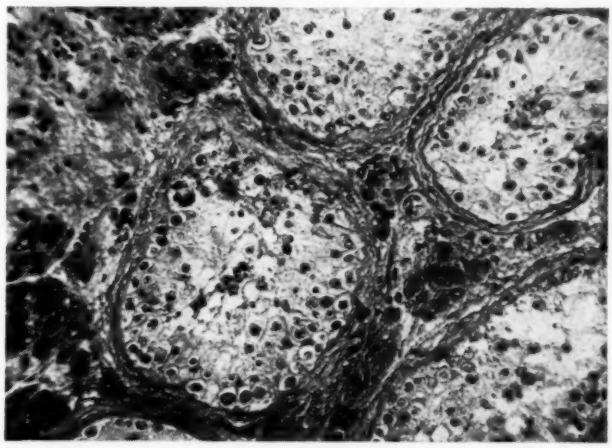

Fig. 5.—Photomicrograph of biopsy specimen of testis from a man whose sperm count averages 18 million per cubic centimeter (× 150). The tubules are reduced in size and show regional progressive fibrosis. Note the marked thickening of the peritubular tissues. Spermatogenesis is poor, collagen deposits are evident, and Leydig cells are numerous.

Characteristics of Intertubular Areas: The areas between the tubules should not be more than moderately evident, unless poor technique of tissue preparation has caused unnecessary shrinkage. They normally contain scattered groups of Leydig cells, various connective tissue cells, lymphocytes and mast cells in small numbers, and delicate connective tissue fibers (fig. 3). Unusually large intertubular areas which may be occupied by fluid and deposits of collagenous material occur in cases of severe tubular damage. Leydig cells vary in numbers and in characteristics, frequently being, at least apparently,

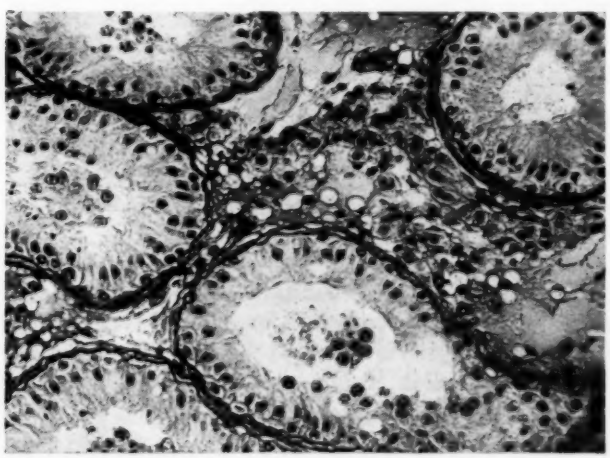

Fig. 6.—Photomicrograph of biopsy specimen of testis from a man whose sperm count averages 4 million per cubic centimeter (× 150). The tubules are somewhat reduced in size and show mild fibrosis. Spermatogenesis is poor owing to severe hypoplasia. Note the paucity of germinal cells and rarity of spermatozoa. The intertubular spaces are large, and Leydig cells are essentially normal.

unusually numerous in instances of tubular damage. Unusual numbers of lymphocytes may be present and may be related to chronic infective processes. In such cases tubular damage is always evident.

It is beyond the range of the present discussion to consider in detail the various testicular defects encountered in infertile men or the application of therapeutic procedures. These subjects have been described elsewhere, and reference to these sources can be made for a more complete discussion of both the types of testicular defects, as revealed by biopsy studies,[3] and their treatment.[4] It is pertinent, however, to consider briefly the application of the procedures that have been outlined for the evaluation of the biopsy. As a point of departure in outlining the commoner conditions encountered in testes of infertile men, it is convenient to separate them into two groups on the basis of the information provided by studies of the seminal fluid. These groups are (1) azoospermia, or complete absence of sperm in the ejaculate, and (2) oligospermia, or great reduction in the number of sperm in the ejaculate.

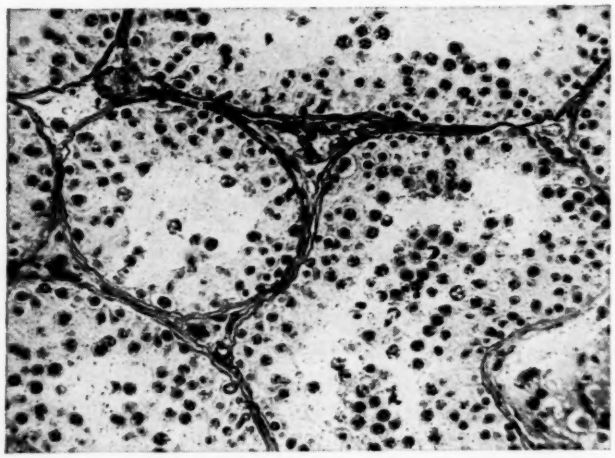

Fig. 7.—Photomicrograph of biopsy specimen of testis showing complete germinal cell arrest (× 150). The tubules are normal in size and show good spermatogenesis up to the primary spermatocyte stage. No advanced stages are present. Peritubular fibrosis is insignificant, and Leydig cells are normal.

AZOOSPERMIA

One of four well-delineated histological conditions may be expected in a biopsy specimen from a man whose ejaculates lack sperm on repeated examinations. These four categories, together with their frequency of occurrence in a series of 196 cases of azoospermia are as follows: (1) normal or essentially normal spermatogenesis, 25%; (2) complete or essentially complete peritubular fibrosis, 18%; (3) germinal cell aplasia, 35%; (4) complete germinal cell arrest, 22%.

Normal Spermatogenesis.—When testicular biopsy of an azoospermic man reveals an essentially normal testicular histological pattern, it is possible at once to diagnose the defect as one of bilateral obstruction of the sperm passages (fig. 3). This condition may be due to congenital absence of some portion of the excurrent ducts or to inflammatory obstruction of some part of the duct system. Although normal spermatogenesis is often observed in men with absent or obstructed ducts, this is not always true, because the testes of such men are liable to the same defects that occur in men with patent duct systems. This fact assumes special significance in the event that consideration is being given to an attempt to anastomose the duct system. Testes that have serious defects cannot be expected to provide adequate numbers of sperm to utilize effectively the open pathways established through surgical procedures unless those defects are remedied. Since the chances for successful anastomosis are only fair, it is important to consider the sperm producing potential of the testes in conjunction with such procedures.

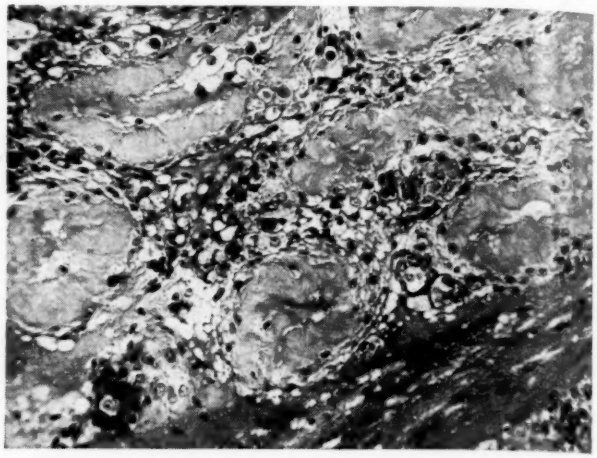

Fig. 8.—Photomicrograph of biopsy specimen from testis showing complete fibrosis of the tubules (× 150). The intertubular spaces are large, and a deposit of collagen can be seen. Leydig cells are relatively numerous but tend to be vacuolated.

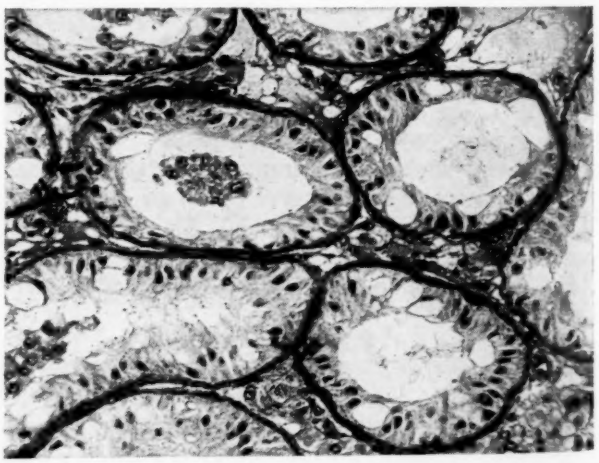

Fig. 9.—Photomicrograph of biopsy specimen of testis showing germinal cell aplasia (× 150). The tubules are slightly smaller than normal, show mild fibrosis, and contain Sertoli cells only. Leydig cells are normal.

Complete Fibrosis.—A diagnosis of complete fibrosis is made when peritubular fibrosis is so widespread and devastating that all or almost all tubules are either completely obliterated or are so seriously damaged that the

3. Heller and Nelson.[2] Nelson, W. O., and Heller, C. G.: The Testis in Human Hypogonadism, Recent Progr. Hormone Research **3**: 197, 1948. Howard, R. P.; Sniffen, R. C.; Simmons, F. A., and Albright, F.: Testicular Deficiency: A Clinical and Pathological Study, J. Clin. Endocrinol. **10**: 121, 1950. Nelson, W. O.: Testicular Morphology in Eunuchoidal and Infertile Men, Fertil. and Steril. **1**: 477, 1950.

4. (*a*) Simmons.[1a] Nelson,[1b] (*b*) Nelson, W. O., and Heller, C. G.: Diseases of the Reproductive System, Ann. Rev. Med. **2**:179, 1951. (*c*) MacLeod, J.: The Kinetics of Spermatogenesis as Revealed by Changes in the Ejaculate, Ann. New York Acad. Sc., 1952, to be published.

spermatogenic process has been halted (fig. 8). The intertubular areas usually contain unusual amounts of collagenous material and numbers of fibroblasts. Leydig cells occur in variable but usually less than normal numbers; the exception to this includes the cases of men with the noneunuchoidal variant of the Klinefelter syndrome, in which Leydig cells tend to occur in unusually large numbers. A few tubules may show only partial fibrosis or may be relatively undamaged and even producing a few spermatozoa; however, these tubules are so few as to be of no consequence, and their sperm production is so low that spermatozoa only rarely can be seen in the ejaculate. This defect has a hopeless prognosis, since all or almost all germinal cells have been lost.

Germinal Cell Aplasia.—Germinal cell aplasia is easily recognized; the tubules, which usually are only slightly smaller than normal and without significant peritubular fibrosis, are populated exclusively by the sustentacular cells of Sertoli and lack germinal cells completely (fig. 9). Occasionally cases are encountered in which a few tubules contain germ cells, usually only spermatogonia or spermatocytes, but, even in instances in which sperm are noted, these are so rare as to be of no consequence. Germinal cell aplasia may be a congenital defect or may represent a secondary loss of the germinal cells. In either event, the prognosis for improvement is hopeless.

Germinal Cell Arrest.—In germinal cell arrest, biopsy specimens show that in all or many tubules spermatogenesis is in progress but is failing, uniformly, to proceed beyond one of the immature phases of the process. In the great majority of cases the point of arrested maturation is the primary spermatocyte (fig. 7). Instead of undergoing the anticipated reduction division, the nuclei fragment, become pyknotic, or undergo a bizarre type of division that results in the formation of polynucleated cells. Peritubular fibrosis is variable and does not appear to be directly related to the arrest phenomenon. The intertubular areas usually contain normal numbers of Leydig cells and rarely show an unusual number of other cells or of collagenous fibers. This interesting condition is inadequately understood both etiologically and from a therapeutic standpoint. It is seen in men who are recovering from diseases in which fever has occurred, in men whose occupation has subjected them to high temperatures, and in men with tumors of the hypophysis or with low levels of gonadotropin. Some cases probably are instances of constitutionally defective germ cells, and others may be due to endogenous or exogenous toxic substances. As noted above and elsewhere,[1b] treatment of this condition has not been satisfactory in the majority of cases.

OLIGOSPERMIA

In men whose ejaculates show reduced numbers of spermatozoa, the biopsy frequently presents perplexing and difficult problems of interpretation. Although the scope of this discussion does not permit a complete consideration of the various defects and their combinations, it should be of value to note the major categories. For this purpose, 426 cases in which the sperm count averaged less than 50 million per cubic centimeter have been arranged in five categories that represent the commonest histological pictures in testes of oligospermic men. It should be noted that although emphasis in this arrangement is placed on the morphological defect regarded as most significant, it is the rule rather than the exception to find multiple defects. Note also should be made of the arbitrary use of a sperm concentration of 50 million per cubic centimeter as a dividing line between oligospermia and a "normal" sperm count. This may not be entirely justified in view of recent analyses [4c] indicating that 20 million per cubic centimeter may be the dividing line between probable fertility and infertility; however, men with counts between 20 and 50 or 60 million present themselves as infertility problems so often and their testes show such significant defects that they are included in this summary. The five principal categories, together with their frequency of occurrence in 426 cases are as follows: (1) sloughing and/or disorganization of the germinal epithelium, 46%; (2) incomplete germinal cell arrest, 21%; (3) regional or incomplete fibrosis, 15%; (4) germinal cell hypoplasia, 13%; (5) normal or essentially normal spermatogenesis, 5%.

Sloughing and Disorganization.—In many biopsies from oligospermic men the observer is immediately impressed with the jumbled appearance of the seminiferous epithelium and the clogged condition of the tubular lumens (fig. 4). Closer examination reveals that this is due to a disturbance of the normal orderly sequence of spermatogenesis or to sloughing of immature cells into the tubular lumens or, as is often the case, to a combination of the two defects. The result of these disturbances of spermatogenesis is a reduction in the number of germ cells that reach maturity. Peritubular fibrosis of varying degrees is commonly seen in this condition, and it is not unusual to observe collagenous deposits in the intertubular areas. Leydig cells usually are present in normal numbers. The possible etiological factors and treatment for conditions involving disorganization and sloughing have been discussed elsewhere.[5]

Incomplete Germinal Cell Arrest.—Incomplete germinal cell arrest is similar to complete germinal cell arrest (fig. 7) and differs from it only in that the arrest of spermatogenesis does not involve all spermatocytes. The histological picture is one in which many spermatocytes show fragmentation or pyknotic changes but others show the normal changes of the process of maturation, and, thus, detectable, though never large, numbers of spermatozoa appear in the seminal fluid. The etiological factors responsible for incomplete arrest probably are similar to those described for complete arrest. The response of these cases to treatment is uncertain and probably reflects the fact that various factors may be responsible for the condition.[1b]

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5. (*a*) Nelson,[1b] Nelson and Heller.[4b] (*b*) Heckel, N. J.; Rosso, W. A., and Kestel, L.: Spermatogenic Rebound Phenomenon after Administration of Testosterone Propionate, J. Clin. Endocrinol. **11**: 235, 1951. (*c*) Heckel, N. J.: The Effects of Testosterone Propionate Upon the Spermatogenic Function of the Human Testis, Ann. New York Acad. Sc., 1952, to be published.

Regional or Incomplete Fibrosis.—In cases of incomplete fibrosis biopsy shows a less severe form of peritubular fibrosis than is observed in instances of complete fibrosis. The fibrotic process may be essentially regional, in which case the tubules in only some areas are completely or severely sclerosed, or it may be more widespread, with many tubules showing moderate to severe sclerosis (fig. 5). In either event the sperm producing capacity of the testes is impaired to a degree proportional to the extent and severity of the fibrotic process, since the number of germ cells is reduced as fibrosis increases. This condition appears in many cases to be progressive. Serial biopsies have shown that fibrosis becomes severer with passage of time. The response to treatment probably depends on the severity and extent of fibrosis.[6]

Germinal Cell Hypoplasia.—In a relatively small percentage of cases of oligospermia the testicular biopsy shows tubules that tend to be smaller than normal and to be sparsely populated with germinal cells (fig. 6). The paucity of cells is reflected in all stages of spermatogenesis and suggests that the spermatogonia, youngest cells of the germinal series, fail to divide frequently enough to provide sufficient cells for good spermatogenesis. As a rule, cells that do progress beyond the spermatogonial stage continue on to form spermatozoa, but the number of these is too small to allow for the production of more than a few million spermatozoa in the average ejaculate. Since the germinal cells are sparse, the Sertoli cells are unusually conspicuous, and the picture resembles but is not identical with that of germinal cell aplasia. It is possible that some cases of germinal cell aplasia represent the terminal phase of germinal cell hypoplasia.[7] Peritubular fibrosis and intertubular deposits of collagenous material may be seen in cases of hypoplasia, but these conditions do not occur uniformly or constantly. Many cases of germinal cell hypoplasia have not responded to treatment, but success has been achieved in cases in which the defect is less severe.[1b]

Normal or Essentially Normal Spermatogenesis.—Occasionally the testes of men with low sperm counts will present a surprisingly normal appearance and suggest that more sperm are being produced than are found in the ejaculate. When this is observed it is reasonable to suspect partial occlusion of the excurrent ducts. In most instances this probably is the result of prostatitis or seminal vesiculitis with attendant narrowing of the ejactulatory ducts due to edema, stricture, or plugs of mucus. Treatment in these cases should be directed toward eliminating the cause of the occlusion.[1]

SUMMARY AND CONCLUSIONS

The scope of this presentation has not permitted the consideration of all aspects of male infertility, and it has not been possible to provide more than cursory consideration of the causes and treatment of the defects discussed. These subjects have been treated more completely in other papers and reference to them can be made for such details. An attempt has been made to discuss the preparation and interpretation of testicular histology with special reference to the conditions that may be encountered in cases of eunuchoidism and infertility. Although in some instances of infertility the biopsy pictures may be so puzzling as to require considerable experience for their interpretation, in the majority of cases application of the suggestions for study that have been offered in this paper will enable the observer to diagnose and interpret the defect. With the diagnosis established, treatment of the patient in question can be provided on a sound and intelligent basis.

Relative to the treatment of infertility it is pertinent to point out that perhaps the most important contribution provided by the testicular biopsy to the evaluation of male infertility has been the screening out of patients in whom no response can be expected to any of the available therapeutic procedures. A real saving of time, money, and inconvenience as well as the avoidance of unnecessary disappointment and frustration can thus be effected. It is not unusual to be consulted by patients who have received treatment with various gonadotropic hormones, androgens, thyroid substance, and assorted vitamins over a period of years without apparent beneficial effects. It is not unusual to find that, when biopsies are obtained from these patients, their testes lack germ cells completely or most of their tubules have been destroyed by peritubular fibrosis. When biopsy is performed prior to institution of therapy in such cases it is possible to eliminate procedures that have no chance of providing improvement and to counsel the patient accordingly. As a general rule, and for obvious reasons, it is not advisable to tell a patient that he is hopelessly sterile. Furthermore, such dogmatism is in some cases unwarranted. The same purpose can be served by simply informing him that it is extremely unlikely that he will be able to effect fertilization.

6. Nelson.[1b] Heckel and others.[9b] Heckel.[10c]

7. Heller, C. G.; Paulsen, C. A.; Mortimore, G. E., and Nelson, W. O.: Urinary Gonadotrophins, Spermatogenic Activity and Classification of Testicular Morphology: Their Bearing on the Utilization Hypothesis, Ann. New York Acad. Sc., 1952, to be published.

Congenital Heart Disease.—Prior to birth the infant derives its oxygen from the maternal circulation through the placenta. The lungs are collapsed. Oxygenated blood is conducted through the umbilical vein to the right auricle of the fetus where a portion enters the right ventricle to be propelled into the pulmonary circulation, and the remainder is shunted through the interauricular communication (patent foramen ovale) into the left auricle and thence into the systemic circulation. In addition the systemic circulation also receives blood shunted directly from the pulmonary artery, where the pressure is high (due to the high resistance offered by the collapsed lungs) through the ductus arteriosus into the aorta. However, with birth or shortly thereafter, two adjustments occur. Both the foramen ovale and ductus arteriosus normally close. This completely separates the pulmonary and systemic circulations and the normal postnatal circulatory plan is established. In most instances the etiology of congenital cardiac lesions is not known. Certain viral infections occurring in the mother in the early months of pregnancy are now recognized etiologic factors. The majority of these defects do occur relatively early in embryonic life. The persistent patent ductus arteriosus is an exception since it is a developmental error which occurs late. The malformations show great variation, and many are incompatible with extra-uterine life.—David C. Sabiston Jr., M.D., and Alfred Blalock, M.D., The Surgical Treatment of Congenital Heart Disease Accompanied by Cyanosis, *Surgical Clinics of North America*, October, 1952.

RECOGNITION OF SURGICALLY TREATABLE NEUROLOGICAL DISORDERS OF CHILDHOOD

Jonathan M. Williams, M.D.
and
Harold Stevens, M.D., Ph.D., Washington, D. C.

The last 20 years constitute an epoch in the history of medical science. New diagnostic and therapeutic weapons have had sufficient impact on the body of medical knowledge to generate new specialties and submerge others. New areas of overlap and confluence have emerged to meet this demand and challenge, one of which is the subspecialty pediatric neurology. It is the objective of this presentation to define some of the clinical problems in this sphere and to emphasize the increasing need for earlier and more accurate diagnosis so that the newer therapeutic principles can be promptly and effectively implemented.

NEUROLOGICAL CHILDHOOD DISORDERS

Meningocele.—While it is true that meningoceles are not all uniformly treatable and curable, many patients do benefit by removal of the sac and closure of the defect.[1] Such surgical procedures, of course, do not completely restore the integrity of the nervous system. Furthermore, after repair the head sometimes begins to enlarge, the fontanel becomes tense, and hydrocephalus develops. It is at this point that the Arnold-Chiari malformation should be considered as a possible cause of the hydrocephalus. This is a developmental anomaly frequently associated with meningocele in which the tonsils of the cerebellum became incarcerated along with the medulla in the foramen magnum (fig. 1). This impaction results in closure of the foramens of Luschka and Magendie, preventing the escape of spinal fluid from the ventricular system. The hydrocephalus resulting from such malformation is of the obstructive type, which, if uncorrected, results in vast destruction of brain tissue and reduces the child to a vegetative state.

Treatment of this condition lies in resection of the cerebellar tonsils, thus freeing the spinal fluid pathways. This disorder can persist for some time unrecognized, or the surgeon may adopt an attitude of hopelessness in regard to the hydrocephalus and postpone surgery. In either event, irreparable damage to the brain will inevitably result; and even though corrective steps may be taken at a later time, the mentality of the child may have been sacrificed. The Arnold-Chiari malformation is not solely related to the presence of a meningocele, however, and evidence of its presence may not be detected for a number of years. In these cases the development of the disorder is often insidious, progressing with the growth of the child. Such children may be mistakenly diagnosed as having cerebral palsy. Clinically, they may exhibit spasticity involving one or all extremities, coupled with signs of cerebellar dyssynergia that is frequently mistaken for athetosis. Sensory defects typical of a high cervical lesion may be found. A differential point of great importance in these cases, however, is the absence of intellectual impairment in the child. Careful examination will reveal no signs suggestive of damage above the level of the lower medulla and cerebellum. If the diagnosis is made promptly, satisfactory regression of the symptoms may be anticipated, with good functional recovery.

Idiopathic Scoliosis.—It is our opinion that any child with so-called idiopathic scoliosis should have a careful neurological examination, especially if the application of such measures as traction and turnbuckle casts is contemplated. The possibility of spinal cord tumor should not be overlooked. It should be further emphasized that a positive purified protein derivative test, in the absence of x-ray evidence, does not justify a diagnosis of Pott's disease. A short case history will illustrate the desirability of such an examination.

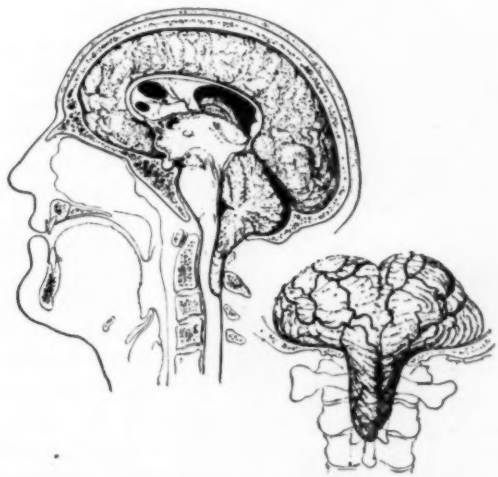

Fig. 1.—Drawing shows incarceration of cerebellar tonsils in foramen magnum with compression of medulla oblongata. Also shown is abnormal elongation of this portion of cerebellum. (From Surgical Treatment of the Nervous System, edited by F. W. Bancroft and C. Pilcher, in chapter by H. C. Naffziger and E. Boldrey, Philadelphia, J. B. Lippincott Company, 1946.)

The mother of an 8-year-old boy noted that gradual curvature of the spine was developing in her son. The child, however, complained that he had frequent abdominal pain in the right flank. He was seen in the medical and surgical clinics, where various intra-abdominal disorders were sought for and not found. The mother's remarks that she thought the child really had pain in its back, not its abdomen, when unheeded. Over a period of a month or two, enuresis developed and constipation became quite troublesome. The child stumbled frequently. He was referred to the orthopedic clinic, and, because of a positive purified protein derivative test, a diagnosis of Pott's disease was made, though this was not borne out by x-ray studies.

The child was admitted to the hospital and placed in traction on a Boston frame. Some 12 hours after the traction was ap-

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Read before the Section on Nervous and Mental Diseases at the 101st Annual Session of the American Medical Association, Chicago, June 10, 1952.

1. Ingraham, F. D., and others: Spina Bifida and Cranium Bifidum, Cambridge, Mass., Harvard University Press, 1944.

plied, there developed in the child total bladder incontinence and a paraplegia with a sensory level at the umbilicus. The lower extremities were spastic, and bilateral Babinski's reflexes and clonus were present. There was tenderness on pressure over the ninth dorsal vertebra. Spinal puncture was performed, a complete block was demonstrated, and the fluid was observed to be xanthochromic with a total protein content of 1,200 mg. per 100 cc. (by the sulfosalicylic method). Myelography revealed a block at the level of the 10th dorsal vertebra. Immediate laminectomy was performed, and an intramedullary ependymoma of the spinal cord was found and removed.

Over a period of three weeks the child's paraplegia regressed, and functional improvement in the legs became apparent. One year later the child was able to ride a bicycle and had enuresis only occasionally. The only residual deficit was the persistence of Romberg's sign. (For illustration of similar case, see figure 2.)

Pott's Disease.—When Pott's disease is associated with signs of spinal cord compression, a degree of urgency may exist. It is unfortunate that, in the minds of some practitioners, proper bony realignment takes precedence over the restoration of neurological integrity. It cannot be overemphasized that the bones can wait but the nervous system cannot when signs of compression appear. The neurological consequences of compression of the cord are probably more the result of interference with the blood supply of the spinal cord than of direct impingement on the nerve pathways themselves. The delicate sensitivity of neural tissues to prolonged states of anoxia compels the early correction of this condition. Such measures as prolonged hyperextension over a period of weeks may even hasten cord damage. Thanks to the development of streptomycin and even newer agents for the treatment of tuberculosis, surgical attack upon these lesions in selected cases is not fraught with the danger of persistent sinuses and spread of infection as it once was. It is feasible now to perform a spinal fusion on these children at the time of the laminectomy. Postoperatively, hyperextension may be entirely desirable, and casts may prove efficacious in the proper realignment of the vertebral column.

Fig. 2.—Case of curvature of spine (similar to one described in text) in adolescent girl that was diagnosed as "idiopathic scoliosis." It was subsequently shown to have been a cervical cord tumor.

2. Bailey, P.; Buchanan, D. N., and Bucy, P. C.: Intracranial Tumors of Infancy and Childhood, Chicago, University of Chicago Press, 1939. Ford, F. R.: Diseases of the Nervous System in Infancy, Childhood and Adolescence, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1944.

Brain Tumor.—Much has been written about the occurrence of brain tumor in childhood,[2] and this presentation is not considered the proper place to give a detailed discussion of this disorder. The vast majority of brain tumors in childhood occur below the tentorium and involve either the brain stem itself or the cerebellum. Of these two, the brain stem is more likely to be involved by an extremely malignant tumor of childhood, the medulloblastoma. On the other hand, the cerebellum is usually the site of a benign tumor, the cystic astrocytoma. The medulloblastoma tends to occur in boys below the age of 6, whereas the astrocytoma is more likely to occur in both sexes above that age. Therefore, it is especially incumbent on the pediatrician to urge surgical exploration with all convenient speed in those cases of children exhibiting signs of brain tumor above the age of 6.

Skull Fracture.—The cranial vault in childhood is a notably resilient structure, and it is probable that for this reason epidural hematomas, as seen in the adult, are rarely observed in childhood. This very resilience, however, is responsible for the greater occurrence of stellate depressed fracture, which most commonly results from the head striking a flat surface, such as often happens in a fall to the sidewalk. While at times few, if any, symptoms derive from such a fracture, there is always the possibility that later scarring may develop, resulting in epilepsy or mild paretic states. If the depression is pronounced, prompt elevation of the bony fragments is necessary. It is with discouraging regularity that we have noted how frequently a lateral projection of the skull fails to reveal such a fracture even when it is quite large. This is particularly true of fractures in the parietal region. It is only when an anteroposterior projection is secured that these depressions become evident and the diagnosis of fracture is manifest. We urge, therefore, that the x-ray examination of the skull in an injured child include the anteroposterior view to insure that such a depression is not overlooked (fig. 3).

Fig. 3.—Lateral and anteroposterior projections of skull in a case of depressed skull fracture in parietal region. Note that there is no sign of fracture on lateral view, whereas on sagittal view the depression is clearly evident.

Brain Abscess.—The advent of antibiotics has markedly reduced the frequency with which purulent otitis media is encountered. Along with this, of course, there has been a considerable reduction in the number of mastoidectomies performed. This welcome development tends to lull the busy practitioner into the comfortable feeling that brain abscess, too, is a thing of the past. It is of particular importance to the attending physician to re-

gard with suspicion the development of a convulsion during the course of an otitis media, regardless of whether the child is receiving antibiotic therapy or not. This convulsion may well be the first signal of the entry of the infection into the brain from the middle ear. This is even more likely to be true when focal neurological signs persist after recovery from the convulsion. It must be emphasized that following an occurrence of this sort, repeated and careful neurological examinations, including visualization of the optic fundi, are necessary. Should such an abscess be proved to be present, its prompt drainage or removal is necessary.

Tuberculous Meningitis.—Until just recently, tuberculous meningitis has been uniformly a lethal disease. Currently, however, newer methods of treatment hold promise of changing this hopeless outlook. Experienced workers employing streptomycin, glucosulfone (promin®) sodium, para-aminosalicylic acid, and the new isonicotinic acid compounds have reported encouraging results.[3] In spite of the efficacy of these drugs, complications arise in some cases that require the assistance of the neurosurgeon. For example, he is needed to perform trephines for intraventricular introduction of drugs or to reduce the intracranial pressure; to incise the tentorium, thus releasing the pressure against the brain stem; and to place a Torkildsen tube in the ventricular system and detour the obstruction to spinal fluid circulation, thus preventing or minimizing the threat of hydrocephalus. All authorities emphasize the urgency for prompt diagnosis in order to exploit these newer medical and surgical therapeutic principles. Any child with the accepted signs and symptoms of meningitis should be expeditiously investigated for a tuberculous causation. A history of contact with the disease or a positive chest roentgenogram and purified protein derivative test further support the diagnosis. The spinal fluid findings establish the diagnosis, but institution of treatment should not await positive laboratory demonstration of tubercle bacillus.

Subdural Effusions.—In the past two years we have encountered a curious clinical phenomenon that has been described as a new disorder of infancy. This is the occurrence of subdural effusions as a consequence of pyogenic meningitis. Heretofore, many infants who had such diseases died, but now, through the use of antibiotics, many of these children are saved. This is particularly true of infants suffering from meningitis due to Hemophilus influenzae and Diplococcus pneumoniae. Dr. Margaret Smith [4] and others [5] have called attention to the fact that at times the children whose apparent clinical course of improvement has become arrested are in reality suffering from subdural effusions, probably the result of interference with the spinal fluid absorptive mechanisms. Keen awareness of this complication has justified the rubric in our hospital that when a child fails within 72 hours to respond promptly to antibiotic therapy in the treatment of meningitis, subdural effusion should be considered as a complicating agent.

Over the course of a year and a half, we have had the opportunity of examining 26 children in whom subdural effusions were subsequently proved to exist. The detection of these effusions is often predicated upon the existence of a tense and bulging fontanel. However, as more children were examined, we were surprised to find that subdural effusions occurred in a number of cases of children who had never had meningitis. Of the 26 children gathered from the neurological service of the Children's Hospital and from the pediatric division of Gallinger Municipal Hospital, Washington, D. C., 7 fell into this category. These seven children suffered from chronic debilitating diseases such as severe malnutrition or low-grade fever and pulmonary infection. We have been so struck by the appearance of this disorder in these nonmeningitic children that we have considered the disorder to be a consequence of nonspecific athrepsia. For example, recently there were eight children in the diarrhea ward upon whom subdural punctures were performed bilaterally, and, of these, three were found to have bilateral subdural effusions amounting to from 5 to 30 cc. on each side. The fluid was, as a rule, limpid; and, on analysis, about half the time its consistency was identical with that of normal cerebrospinal fluid obtained at the same time by lumbar tap. In the other half of the cases the cell count was normal, but the protein content was definitely elevated, being as high as 300 or 400 mg. per 100 cc. Repeated daily taps indicated that this fluid was rather rapidly formed, or replaced, and that its protein constituents remained quite uniform as compared to the first specimen. On three occasions it appeared that the repeated taps were successful in "drying up" this subdural effusion.

For a time we were content to believe that the above procedure was a method of treatment as well as diagnosis and that when the subdural effusion appeared to have stopped forming, nothing further need be done. Later experience, however, with the meningitic patients has demonstrated that this is not true, for even in the absence of subdural fluid a definite membrane may still persist, and in our opinion its removal is imperative. The need for such surgery is justified on the following grounds: Firstly, this membrane is most constantly found to extend posteriorly from the anterior frontal pole, usually embracing the tip of the temporal lobe and receding at about the level of the rolandic fissure. It is observed to be of considerable thickness over the frontal pole and to thin out in its backward course. Such a membrane is tough, inelastic, and rather well vascularized. It seems reasonable that such a constricting agent can prevent further growth of the brain, thus accounting for severe and progressive retardation of intellectual and behavioral development. When the existence of these membranes was demonstrated and their surgical removal undertaken,

3. Lincoln, E. M.: Treatment of Tuberculous Meningitis with Streptomycin and Promizole,® Am. J. Dis. Child. **79**: 400 (Feb.) 1950. Cathie, I. A. B., and MacFarlane, J. C. W.: Adjuvants to Streptomycin in Treating Tuberculous Meningitis in Children, Lancet **2**: 784, 1950. Cairns, H.: Tuberculous Meningitis Treated with Streptomycin, Tr. Am. Neurol. A. **75**: 110, 1950.

4. Smith, M. H. D.; Dormont, R. E., and Prather, G. W.: Subdural Effusions Complicating Bacterial Meningitis, Pediatrics **7**: 34, 1951.

5. McKay, R. J., Jr.; Morisette, R. A.; Ingraham, F. D., and Matson, D. D.: Collections of Subdural Fluid Complicating Meningitis Due to Haemophilus Influenzae (Type B): Preliminary New England Report, J. Med. **242**: 20, 1950. Arnold, G. C.: Purulent and Serous Subdural Effusions in the Course of Purulent Meningitis, J. Pediat. **39**: 191, 1951.

in some instances we were gratified to see the developmental rate accelerate. Secondly, we believe that this thick, heavily vascularized neomembrane intimately applied to the brain may at times extend small capillary roots into the cerebral substance itself, thus forming a meningocerebral cicatrix. This could be responsible for the later development of convulsive seizures. Indeed, it is possible that here lies an explanation for yet another group of heretofore inexplicable cases of convulsive disorders usually regarded as idiopathic epilepsy.

CONCLUSION

The diagnosis of neurological disease in childhood no longer implies the sinister outcome accepted by the previous generation of practitioners. The collaborative efforts of pediatrician, neurologist, and neurosurgeon are rapidly expanding the universe of therapy in this field, consequently imposing increasing responsibility on the physician to promptly diagnose these neurological disorders (some of which have been discussed above).

2014 R St., N.W. (9) (Dr. Williams).

TWO-STEP EXERCISE ELECTROCARDIOGRAM

FOLLOW-UP INVESTIGATION IN PATIENTS WITH CHEST PAIN AND NORMAL RESTING ELECTROCARDIOGRAM

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and
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Coronary artery disease now constitutes three-fourths of all diseases of the heart. Even in the presence of severe coronary artery disease and anginal pain, however, the entire physical examination, the roentgenography and fluoroscopy, and the 12-lead resting electrocardiogram may be completely normal. We have found this to be true in 37% of our cases, and others have reported similar normal findings in from 25 to 60% of their cases.[1] Although the correct clinical diagnosis of coronary disease can usually be made on the basis of the history alone, in these cases it is important to have some corroborative, objective evidence to confirm the diagnosis. This is essential in borderline cases in which the history of chest pain is not typical and the clinical diagnosis is, therefore, doubtful. In our experience, for example, 64% of patients with functional heart disturbances gave a history of chest pain or pressure.[2] The use of glyceryl trinitrate (nitroglycerin) as a differential diagnostic test between cardiac and noncardiac pain is not entirely reliable. In some cases glyceryl trinitrate may not relieve cardiac pain but does relieve pain of noncardiac origin.[2]

One cannot always differentiate between cardiac and extracardiac or functional pain, because the pain in coronary disease may not be typical and because occasionally functional or extracardiac pain, like cardiac pain, radiates to the back, the neck, the shoulder, or down the arm and is related to emotion or excitement. All too commonly, patients have been erroneously made cardiac invalids, because the pain caused by a hiatal hernia or spondylitis, for example, was attributed to coronary disease. It is, therefore, important to have an objective test that will establish the existence or absence of coronary insufficiency when the resting electrocardiogram is normal.[1] Such a test is also of value in the annual examination of firemen, policemen, taxi drivers, train engineers, truckmen, pilots, and officers in the armed forces,[1] and it might well be given to employees in various phases of industry.[3] A functional test of coronary insufficiency is often very important in compensation work and in the determination of disability among the insured. It may be used not only as a diagnostic aid but also as a gage of the improvement or regression of existent heart disease.

The test we have used since 1927 is the standardized Master two-step exercise test.[1] Exercise is a much more sensitive means of inducing anoxemia of the myocardium than is breathing in an atmosphere of 10% oxygen. Patients with severe coronary disease often can tolerate an altitude of 10,000 ft. but may have difficulty in doing light work at sea level or at low altitudes. We have had experience with the two-step test in thousands of patients.[1] It is a simple procedure and one to which the patient is accustomed. Over the years no accident has ever occurred during the performance of the test. The two-step test should be done only when the resting electrocardiogram is normal. The single two-step test is done first; if it is negative, the double test must be performed. In one-third of the patients with a negative single test, the double test was positive. Pain in the chest is uncommon during the test, but if it does occur the test should be discontinued. Of course, the test should never be performed if an acute infarction is suspected clinically, even though the resting or control electrocardiogram is normal.

It is not our purpose here to go into the details of the technique of the two-step test.[1] It is a simple test, easily done, necessitating the use of two steps, each 9 in. high. The number of trips to be made up and down the steps has been calculated and depends on the age, weight, and sex of the patient. In performing the single two-step test the patient makes the necessary number of trips in one and one-half minutes. In the double two-step test twice the number of trips is made in a period of three minutes. In taking the Master two-step exercise electrocardi-

From the Cardiographic Laboratory, Mount Sinai Hospital.
Read before the Section on General Practice at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

1. Master, A. M.: The Two-Step Exercise Electrocardiogram: A Test for Coronary Insufficiency, Ann. Int. Med. **32**: 842 (May) 1950.
2. Master, A. M.: The Frequency of Functional Heart Disturbances: A Study of 1,000 Consecutive Private Cardiac Patients, J. A. M. A. **150**: 195 (Sept. 20) 1952.
3. Pordy, L.; Master, A. M., and Chesky, K.: Value of Cardiac Function Tests in Industry, J. A. M. A. **148**: 813 (March 8) 1952.

ogram, only four leads are necessary: that is, the standard limb leads, 1, 2, 3, and either V_4 or V_5, whichever has the tallest R-wave and smallest S combination.* The criteria of an abnormal test include RS-T depressions of more than 0.5 mm. below the base line (the P-Q or P-R interval) or a completely isoelectric or an inverted T-wave. A drop of an elevated RS-T segment to the base line is not considered abnormal.

Although we have worked with the two-step exercise electrocardiogram since 1929, only a limited follow-up study has been reported previously.[4] In this report the results of the two-step tests of 300 consecutive patients have been analyzed. They were first examined in 1946 in the private practice of one of us (A. M. M.) A 12-lead resting electrocardiogram was taken routinely and was found to be normal in all these cases. Frequent follow-up examinations were performed or letters of inquiry written. While all of the patients were seen at least once a year by means of a follow-up system, the majority were examined twice or several times a year. Very often the family physician or the patient answered a follow-up

TABLE 1.—*Age Range of 150 Patients with Negative Results*

	Ages						
	20-29	30-39	40-49	50-59	60-69	70-78	Total
Men	4	16	44	36	18	2	120
Women	1	4	9	9	6	1	30
Total	5	20	53	45	24	3	150

TABLE 2.—*Years of Follow-Up Study in 150 Patients with Negative Results*

Years of Follow-Up (Exclusive)	Total	Men	Women
1 to 2	3	3	0
2 to 3	77	58	19
3 to 4	45	38	7
4 to 5	18	15	3
5 to 6	7	6	1

questionnaire, or we communicated with the physician or the patient directly. The patients were divided into two groups. Of the 300 patients studied, 150 had negative single and negative double Master two-step exercise tests. The remaining 150 patients studied had positive Master two-step tests, either single or double. As we shall prove, the group whose single and double two-step tests were negative suffered predominantly from some extracardiac or functional condition, whereas the group whose single or double two-step tests were positive suffered predominantly from some organic cardiac condition.

RESULTS OF TWO-STEP TESTS

Negative Results.—The age and sex of the 150 patients with both negative single and negative double two-step exercise electrocardiograms are shown in table 1. The ages ranged from 20 to 78 years. The ratio of men to women was 4 to 1. The largest number of patients (53) were in the fifth decade. Seventy-eight were under 50 years of age, and only 72 were older. This is in contrast with the group whose Master two-step tests were positive, among whom the incidence was higher in those over the age of 50. The average follow-up period of these negative test cases was between three and four years (table 2). Practically all these 150 patients were observed for more than two years, while 50% were observed for a period of three years or longer. One of the patients died of carcinoma of the stomach. Coronary occlusion developed in one woman three years after the negative tests were obtained.† It is very rare indeed for a heart attack to occur within a year after a negative Master double two-step exercise test.

TABLE 3.—*Presenting Symptoms in 150 Patients with Negative Results*

Presenting Symptom	Total	Men	Women
Chest pain or pressure	95	75	20
Routine examination	15	12	3
Hypertension	14	12	2
Arrhythmias	10	9	1
Dyspnea	9	6	3
Previous coronary occlusion *	5	5	0
Rheumatic heart disease	2	1	1

* Two of the five patients also complained chiefly of some pain in the chest.

Chest pain or pressure was the commonest and most important complaint among the 150 patients with negative single and double two-step tests (table 3). Ninety-five presented this symptom. In this classification chest pain or pressure took precedence over any other symptom except that of previous coronary occlusion. In two others, who had had a coronary occlusion, chest pain also was the presenting symptom. Others came in for a routine examination, and complained of high blood pressure, an irregularity of the heart, or shortness of breath, or desired to be examined because they had had a previous "heart attack," although they were feeling well.

The final diagnoses, made as a result of our follow-up study, have been analyzed (table 4). Six men and three women were considered normal; they had had no complaint, and the entire examination, including the double two-step test was negative. Forty-one patients had high blood pressure. Seven who had had a coronary occlusion, five men and two women, made a complete functional recovery. This is not uncommon.[5] In the 97 patients in whom chest pain or pressure was the chief complaint the final diagnoses confirmed the reliability of the negative

TABLE 4.—*Final Diagnosis in 150 Patients with Negative Results*

Final Diagnosis	Total	Men	Women
Normal	9	6	3
Functional	86	74	12
Hypertension	41	32	9
Previous coronary occlusion *	7	5	2
Later coronary occlusion	1	0	1 †
Rheumatic heart disease	5	2	3
Congenital heart disease	1	1	0

* Men: 1, 1½, 2, 13, and 18 years previously, respectively; women: 9 months and 15 years before. All had a complete functional recovery.
† Three years later.

Master double two-step test (table 5). In 15 cases arthritis was found; in 8 gallbladder disease was present. Gastrointestinal disease was frequent: hiatus hernia, four

* We have recently modified this procedure in that leads 2 and V_3, V_4, and V_5 are now used routinely for the test. Occasionally it is preferable to employ V_4, V_5, and V_6 with lead 2.

4. Chesky, K.; Pordy, L., and Master, A. M.: The "2-Step" Exercise Electrocardiogram: A Preliminary Follow-up Study of 200 Cases, abstracted, Bull. New York Acad. Med. **27**: 383 (June) 1951.

† We have had two other patients who suffered a coronary occlusion with negative two-step exercise electrocardiograms, but they were not in this series.

5. Master, A. M., and Jaffe, H. L.: Complete Functional Recovery After Coronary Occlusion and Insufficiency, J. A. M. A. **147**: 1721 (Dec. 29) 1951.

cases; ulcer, four; diverticulitis, one; and cancer of the stomach, one. The incidence of hiatus hernia, 4 cases among the 97, is probably a little higher than is usually found on routine examination. Brick and Amory [6] found a hiatus hernia in only 1.3% of 300 patients who were over 50 years of age and had no gastrointestinal symptoms. In 64 of these 97 patients no diagnosis of organic disease was made. They had functional chest pain. This was established after long observation, since they all have remained well.

TABLE 5.—*Associated Diagnosis in Ninety-Seven Patients with Chest Pain or Pressure*

Associated Diagnosis	Total	Men	Women
Gallbladder disease	8	6	2
Arthritis	15	12	3
Hiatus hernia	4	3	1
Ulcer	4	4	0
Diverticulitis	1	1	0
Cancer of stomach	1	0	1
None	64	51	13
Total	97	77	20

Positive Results.—The age of the 150 patients with either a positive single or double two-step test ranged from 25 to 78 years; this range is practically the same as that found in the negative group (table 6). A comparison of the two groups is of interest. The ratio of men to women was 5 to 2 in those with positive tests. In those with negative tests it was 4 to 1. There were thus more women in the positive than in the negative group. The highest incidence in the positive group occurred in the sixth decade (67 cases). This is the age group in which coronary artery disease is commonly found. In contrast, the largest number of patients in the negative group was found in the fifth decade. Only 51 of the 150 patients in the positive group were less than 50 years old, whereas,

TABLE 6.—*Age Range of 150 Patients with Positive Results*

	Age Range						
	25-29	30-39	40-49	50-59	60-69	70-78	Total
Men	0	12	23	54	16	4	109
Women	2	7	7	13	10	2	41
Total	2	19	30	67	26	6	150

TABLE 7.—*Years of Follow-Up Study in 150 Patients with Positive Results*

Years of Follow-Up (Exclusive)	Total	Men	Women
Less than 1	1	1	0
1 to 2	18	14	4
2 to 3	58	42	16
3 to 4	51	37	14
4 to 5	20	13	7
Over 5	2	2	0

78 of the 150 patients in the negative group were under 50. The majority of the patients in whom either the single or the double two-step test was positive were followed for three years or more, as were the majority of the negative (tables 7 and 2). In the positive series, 12 deaths occurred during this follow-up period; 10 of them were definitely due to coronary occlusion. One patient died of malignant nephrosclerosis and the 12th of polioencephalitis. Unfortunately, the condition of the heart could not be ascertained. On the other hand, in the group with negative double two-step exercise electrocardiograms (the extracardiac or functional group) only one death occurred, due to a carcinoma of the stomach.

Chest pain or pressure was the most frequent presenting symptom in those with positive single or double two-step exercise tests (108 cases), as it was in the negative group. The other patients complained of irregularities of the heart (16 cases), high blood pressure (9), shortness of breath (4), a previous coronary occlusion (6), or other heart attack (4) (table 8). Three patients came for routine examination.

The final diagnosis in those with positive tests showed that 62 had had attacks of coronary occlusion (17) or coronary insufficiency (45), thus further confirming the value of either the single or the double two-step test (table 9). Even greater confirmation was obtained from the 24 patients who had a coronary occlusion (6) or coronary insufficiency (18) after the two-step test had been found to be positive. All these 86 patients demonstrated electrocardiographic confirmation of the diagnosis of coronary disease. Of the remaining 64 cases, 49 had definite clinical coronary artery disease and gave typical histories. The positive two-step electrocardiogram gave objective confirmation of the diagnosis. There were 15 who had no organic heart disease; their two-step exercise electrocardiograms were normalized after the injection of dihydroergocornine ("D.H.O.–180"), a sympatholytic agent. In our experience, such normalization very rarely occurs in patients with organic heart disease.[7] That these 15 patients suffered from functional heart disturbances, and not from organic heart disease, was substantiated by the follow-up study. The patients were well and working.

TABLE 8.—*Presenting Symptoms in 150 Patients with Positive Results*

Presenting Symptom	Total	Men	Women
Chest pain or pressure	108	79	29
Hypertension	9	7	2
Arrhythmias	16	10	6
Dyspnea, fatigue	4	2	2
Coronary disease	2	2	0
Previous coronary occlusion	6	5	1
Heart failure	2	1	1
Routine examination	3	3	0

TABLE 9.—*Final Diagnosis in 150 Patients with Positive Results*

Final Diagnosis	Total	Men	Women
Previous coronary occlusion	17	15	2
Previous coronary insufficiency	45	34	11
Later coronary occlusion	6	5	1
Later coronary insufficiency	18	14	4
Coronary disease	64	41	23

COMMENT

Long experience has taught us that there are some common mistakes made by those who take exercise electrocardiograms. Many use techniques other than those prescribed for the Master two-step test without realizing that they are modifying it. Comparisons cannot be made, nor can conclusions applicable to the Master test be drawn. A step-up test using a chair or box 15 to

6. Brick, I. B., and Amory, H. L.: Incidence of Hiatus Hernia in Patients Without Symptoms, Arch. Surg. **60**: 1045 (June) 1950.

7. Pordy, L.: Arai, H. S., and Master, A. M.: Dihydroergocornine in the Differential Diagnosis of Functional Heart Disturbances and Organic Heart Disease, J. Mt. Sinai Hosp. **17**: 26 (May-June) 1950.

20 in. high does not conform with the Master two-step test; neither does walking a patient until pain is induced, knee-bending, nor squatting conform.[8] Many of these modifications are dangerous. We have not had a single accident with the Master two-step test. Moreover, these modified procedures should be standardized on a large series of normal persons of both sexes and of different ages to establish their value. The two-step test is standardized. Excessive exertion may produce electrocardiographic abnormalities in normal persons [1]; furthermore, a man with coronary artery disease, for example, may still have sufficiently adequate function so that the single two-step test is negative but the double test is positive.[1]

We have used dihydroergocornine occasionally in doubtful instances of chest pain when either the single or the double two-step test is abnormal.[7] The abnormal electrocardiogram may be due to organic heart disease, a functional heart disturbance, or to some extracardiac factor; however, the distinction can usually be made on clinical grounds alone. If the patient has actual organic interference with the coronary circulation, the electrocardiogram remains positive when the two-step exercise is repeated after the injection of dihydroergocornine; otherwise, it is normalized.

It must not be thought that the two-step exercise electrocardiogram is useful only in discovering coronary artery disease in those with negative physical findings and normal resting electrocardiograms. It is just as helpful in determining cardiac function, or the status of the coronary circulation, in patients with hypertension, syphilis, or rheumatic heart disease.[1] It is an aid in prognosis also. We have found a remarkable correlation between the results of the test and the clinical history. Thus, a young man of 24, who had rheumatic heart disease with mitral and aortic valve involvement, had had no complaints since 1943. His heart was not enlarged. He has been playing on a varsity lacrosse team. His single and double Master two-step exercise electrocardiograms were negative, corresponding with the unusual clinical picture. Likewise, a patient with definite hypertension,[9] who has no complaints and a normal heart, also has a negative double two-step test; however, when hypertension accelerates arteriosclerosis of the coronary arteries, the two-step test becomes positive. Such a patient with hypertension then has complaints. The two-step test, in our experience, has proved to be an invaluable diagnostic and prognostic procedure if it is carefully done and if the simple technique is accurately employed. The test is not infallible. It must be pointed out that dogmatic diagnosis or prognosis must never be made on the two-step exercise electrocardiogram alone, anymore than with any single laboratory procedure. The test is on an objective aid, nothing more.

SUMMARY

Follow-up studies have been reported of 300 patients seen consecutively in private practice beginning in 1946. The majority of the patients complained of pain in the chest. The resting 12-lead electrocardiogram of all 300 was normal. The patients were divided into two equal groups. The first group consisted of 150 patients with both negative single and negative double Master two-step exercise tests. The second group consisted of 150 patients in whom either the single or double two-step exercise electrocardiogram was positive. Both groups were frequently examined or questioned. The average follow-up period extended for from three to four years.

Among the group of 150 patients with negative single and double Master two-step exercise tests, only 1 woman sustained a coronary occlusion three years later. No other instances of spontaneous coronary disease episodes occurred. Therefore, negative tests indicated that the chest pain was noncardiac in origin. In one-third of these cases further study revealed the true cause for the patient's complaint to be arthritis, gallbladder disease, or gastrointestinal disease (including hiatus hernia). Negative single and double Master two-step exercise tests practically exclude the presence of coronary insufficiency in patients with chest pain and normal resting electrocardiograms. Of course, this is not absolute.

Among the group of 150 patients with positive single or double Master two-step exercise tests, 86 patients (nearly 60%) had spontaneous attacks of coronary occlusion or insufficiency either before or after the exercise test was found to be positive. Twelve deaths occurred among these patients—10 as a result of coronary occlusion. Of the remaining 64 cases, 49 had definite clinical coronary artery disease. Coronary insufficiency may occur either on a functional or an organic basis. Thus, in the remaining 15 persons in this group the clinical impression that the heart disturbance was functional was confirmed by a normalization of the positive exercise tests, following the administration of dihydroergocornine.

In thousands of patients in whom the two-step tests have been performed since 1929, we have never had a single accident. The test is performed only when the resting electrocardiogram is normal. The single two-step test is performed first, and only when this is negative should the double two-step test be done. The Master two-step test is also useful in examinations of firemen, policemen, taxi drivers, train engineers, truckmen, pilots, and officers in the armed forces and in any person exposed to undue mental and physical strain. In fact, it might well be extended to various phases of industry. It is particularly valuable in compensation work and life insurance disability. The two-step test is valuable not only as a diagnostic aid but also as a gage of the improvement or regression of existent heart disease; however, diagnosis or prognosis must never depend solely on the two-step exercise electrocardiogram.

CONCLUSIONS

Follow-up studies of 300 cases have confirmed the value of the Master two-step exercise test in clinical cardiac diagnosis and prognosis.

The Master two-step exercise test furnishes objective corroborative evidence of the presence of coronary insufficiency in clinically suspect cases in which the resting electrocardiogram is normal.

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8. Scherf, D., and Goldhammer, S.: Zur Frühdiagnose der Angina pectoris mit Hilfe des Elektrokardiogramms, Ztschr. f. klin. Med. 124: 111, 1933. Laurentius, P., and Klopffleisch, F.: Kreislauffunktionsprüfung bei Wehrmachtsangehörigen unter besonderer Berücksichtigung des Belastungs-Elektrokardiogramms, München. med. Wchnschr. 87: 1045 (Sept. 27) 1940.

9. Master, A. M.; Dublin, L. I., and Marks, H. H.: The Normal Blood Pressure Range and Its Clinical Implications, J. A. M. A. 143: 1464 (Aug. 26) 1950. Master, A. M.; Garfield, C. I., and Walters, M. B.: Normal Blood Pressure and Hypertension, Philadelphia, Lea & Febiger, 1952.

Negative single and double two-step tests practically, although not absolutely, exclude the presence of coronary insufficiency. Only one case of coronary occlusion occured in the 150 patients during the entire follow-up period, and only one death took place—from carcinoma of the stomach. A positive single or a positive double two-step test provides confirmatory evidence of coronary insufficiency, either of organic or of functional origin. Twelve deaths were observed in this group, 10 from coronary occlusion.

The Master two-step test is invaluable in industry as well as in private practice. The test, as we have described it, is a safe, sensitive, and practical procedure.

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ANOMIC APHASIA

DIFFERENTIAL DIAGNOSIS AND CEREBRAL LOCALIZATION OF LESION IN TWENTY CASES

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Anomic aphasia is a form of speech disorder characterized by difficulty in recalling the names of persons and things. It has been recognized as a distinct clinical entity by nearly every authority on aphasia. Head [1] called it nominal aphasia. A number of writers, including Weisenburg,[2] Goldstein,[3] and Nielsen,[4] have called it amnesic aphasia. Mills,[5] who was convinced that a "naming center" or a "concept center" was located in the temporal lobe, called it temporal anomia or concept aphasia. It seems that the term anomic aphasia most clearly and correctly designates this condition, since it calls attention to the fact that a difficulty in name finding, an anomia, is the essential defect present.

To gain a clear understanding of the relation of anomic aphasia to other speech disorders, a brief consideration of the classification of aphasia is necessary. In table 1 are listed the most widely accepted classifications of aphasia. From this it is evident that there is widespread agreement on the classification of aphasia into three major types, which correspond to the three major functions underlying speech: namely, sensory or receptive functions, associative or elaboration functions, and motor or expressive functions. This agreement on classification does not mean that there is also agreement as to the relationship between these types of aphasia. The relation of anomic aphasia to the motor and sensory disorders is especially confused.

In an attempt to define more clearly the relationship of anomic aphasia to the other speech disorders, another classification is presented (fig. 1). By this diagram it is suggested that speech comes about as the result of the functioning of a very elaborate kind of reflex arc made up of (1) an afferent, sensory, or receptive part; (2) a central, associative, or elaboration part; and (3) an efferent, motor, or expressive part. Furthermore, it is suggested that the function of this "reflex arc" is modified by the higher functions of the whole brain, a defect of which may be designated semantic aphasia or dementia. The important point made by this classification is that a very complicated process of compiling associations and organizing them into concepts related to certain symbols or words must go on between the sensory function of perception on the one hand and the motor function of the articulation of speech on the other and that a lesion can affect this central process alone without producing any disorder of perception, motor speech, or general intelligence. Such a lesion would result in a defect of speech manifested most noticeably by a difficulty in finding or recalling names of persons and things. This is anomic aphasia.

TABLE 1.—*Classification of Types of Aphasia*

Source	Three Major Types of Aphasia			Additional Terms
This paper	Motor	Anomic	Sensory	Semantic
Common terms	Broca's	Amnesic	Wernicke's	.....
Weisenburg	Expressive	Amnesic	Receptive	Expressive-receptive
Head	Verbal	Nominal	Syntactical	Semantic
Mills	Motor	Conceptual	Sensory	.....
Cobb	Motor (apraxia)	Anomia	Agnosia	.....
Goldstein	Expressive 1. Peripheral motor	Amnesic	Receptive 1. Peripheral sensory	Central Aphasia Trans-cortical
	2. Central motor		2. Central sensory	Motor Sensory Mixed
Meyer	Emissive	Intrinsic or elaboration	Receptive	.....
Nielsen	Frontal apractic	Temporal formulation Visual object Auditory object	Agnosia (24 types)	Irreminiscence (15 types)

DIFFERENTIAL DIAGNOSIS OF APHASIA

Anomic Aphasia.—The person suffering from anomic aphasia has no difficulty with the articulation or understanding of language. He can speak quite plainly, spontaneously, and usually in fully formed sentences. At times, however, he comes upon a particular word that he cannot recall, and this causes him to hesitate and use circumlocutions to express himself. This defect is made more obvious when the patient is "put on the spot" by confronting him with objects and demanding that he name them. Some objects he may name readily, but others he is completely unable to name. He recognizes the object in question, knows its use, and, when various names are sug-

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Read before the Section on Nervous and Mental Diseases at the 101st Annual Session of the American Medical Association, Chicago, June 12, 1952.

1. Head, H.: Aphasia and Kindred Disorders of Speech, New York, the Macmillan Company, 1926, vol. 1 and 2.

2. Weisenburg, T. H., and McBride, K. E.: Aphasia: A Clinical and Psychological Study, New York, Commonwealth Fund, 1935.

3. Goldstein, K.: Language and Language Disturbances: Aphasic Symptom Complexes and Their Significance for Medicine and Theory of Language, New York, Grune & Stratton, Inc., 1948.

4. Nielsen, J. M.: Agnosia, Apraxia, Aphasia: Their Value in Cerebral Localization, ed. 2, New York, Paul B. Hoeber, Inc., 1946.

5. Mills, C. K., and McConnell, J. W.: The Naming Centre, with the Report of a Case Indicating Its Location in the Temporal Lobe, J. Nerv. & Ment. Dis. 22: 1-7 (Jan.) 1895.

gested, eliminates the incorrect ones and chooses the right one immediately. A few minutes later he may have the same difficulty with the same word. At times, names that cannot be produced on demand may be used readily in spontaneous speech. For example, he knows that a pen is "something to write with," but he cannot find the name "pen." He refuses to accept "pencil," "stick," or "pin" as the word he wants but accepts "pen" and repeats it plainly. Later, when requested to write his name, he may say "Let me use your pen" without hesitation; but, if again confronted with a pen and asked to name it, he cannot do so.

The degree of language disturbance may vary tremendously in this condition from one so slight it is not recognized by the casual observer to a state in which the patient is incoherent or nearly speechless. Often memory for proper names is affected first, with the names of the patient's close friends escaping him completely. As the names of more persons and objects are "lost," the patient finds it increasingly difficult to express himself without being stopped by the lack of some necessary word. The patient may become so exasperated and embarrassed with his defect that he refuses to try to talk at all, or he may become more voluble and pile one circumlocution on top of another. The picture is often complicated by defects in other language functions. The difficulty in remembering words naturally hinders writing in the same way it does speech, though copying may not be affected at all. In many cases some degree of alexia is present. Because the patient's aphasia may become so severe and complicated by other factors, the history of onset is often a very important help in making a correct diagnosis. This will usually reveal that at its beginning the difficulty was clearly one of anomia.

Motor Aphasia.—The language disturbance in motor aphasia presents a very different picture. Typically, the person suffering from motor aphasia can say only a few words of any kind. Often he can say only "yes" and "no," or he may be able to say only one word, such as a name, and by adding gestures and inflection uses this as best he can to express his reactions. Though he can understand language, he cannot repeat words suggested to him and cannot form sentences. Writing is usually severely impaired or impossible, and he can neither write spontaneously nor copy. Comprehension by reading is usually intact, but it is impossible for the patient to read aloud. As Jackson [6] has pointed out, the power to "preposition" is lost, and the words that are available are used only as interjections or exclamations and at times as "yes" or "no" answers.

The onset of motor aphasia is usually sudden, but if it does come over a period of time it usually does so by short periods of "loss of speech" alternating with periods of normal speech. In the cases in which some degree of recovery takes place, a very confusing picture may appear. The main difficulty remains one of articulation, with words being mispronounced or parts of them being omitted. Here again the history of the onset as well as a study of the existing condition is important. It does not appear from the cases presented later in this paper or from the observations recorded in the literature (see discussion on localization below) that anomia is ever characteristic of motor (Broca's) aphasia. However, when words do not come regularly due to anomia, observers tend to interpret this as meaning that the patient cannot cause his motor speech apparatus to form the word, and they call this motor aphasia.

Associated neurological signs may be of some value in the differentiation of motor aphasia from anomic aphasia. With motor aphasia there is oftener severe motor paralysis than in either anomic or sensory aphasia, but it is important to remember that in a small lesion of Broca's area, no motor paralysis at all is produced, while a large lesion of the posterior lobes may extend forward to the motor area of the frontal lobe, especially the part for the face and hands.

Sensory Aphasia.—Sensory aphasia (used as a general term to include the various forms of inability to understand the spoken or written word) is seldom confused with anomic aphasia, since the defects in perception are usually obvious or can be demonstrated on simple psychological examination. Often, however, sensory aphasia

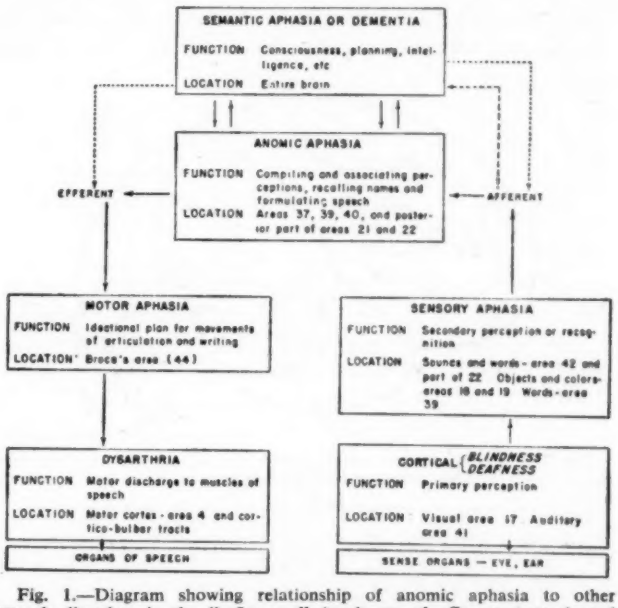
SEMANTIC APHASIA OR DEMENTIA
FUNCTION Consciousness, planning, intelligence, etc
LOCATION Entire brain
ANOMIC APHASIA
FUNCTION Compiling and associating perceptions, recalling names and formulating speech
LOCATION Areas 37, 39, 40, and posterior part of areas 21 and 22
EFFERENT
AFFERENT
MOTOR APHASIA
FUNCTION Ideational plan for movements of articulation and writing
LOCATION Broca's area (44)
SENSORY APHASIA
FUNCTION Secondary perception or recognition
LOCATION Sounds and words - area 42 and part of 22 Objects and colors - areas 18 and 19 Words - area 39
DYSARTHRIA
FUNCTION Motor discharge to muscles of speech
LOCATION Motor cortex - area 4 and cortico-bulbar tracts
CORTICAL BLINDNESS DEAFNESS
FUNCTION Primary perception
LOCATION Visual area 17 Auditory area 41
ORGANS OF SPEECH
SENSE ORGANS — EYE, EAR

Fig. 1.—Diagram showing relationship of anomic aphasia to other speech disorders in the "reflex arc" (made up of afferent, central, and efferent parts) whose functioning produces speech.

of some form and anomic aphasia occur together due to the close proximity or actual overlapping of the cerebral areas involved.

The classical Wernicke's aphasia is a syndrome consisting essentially of auditory verbal agnosia, visual verbal agnosia, agraphia, and paraphasia. It is a severe sensory speech disturbance and usually includes anomic aphasia (which, in a severe form, accounts in part for the paraphasia). When the entire syndrome of Wernicke's aphasia is present, it presents a rather typical picture that Nielsen [4] describes as follows: "The patient is usually voluble and somewhat euphoric. He continues to talk even though he may recognize many errors in his speech, and he is usually not so disturbed by consciousness of errors (he is frequently unconscious of them) as is the patient with predominantly motor aphasia who is paraphasic. The volubility seems to be due more to an ina-

6. Jackson, J. H.: Selected Writings of John Hughlings Jackson, edited by James Taylor and others, London, Hodder & Stoughton, Ltd., 1932, vol. 2, pp. 146-211.

bility to cease rather than a press of activity." Here is the typical jargon aphasia, which has been called syntactical aphasia by Head. The great flow of language stands in marked contrast to the few words uttered by the patient suffering from motor aphasia, and the extreme jargon indicates that some disturbance in addition to anomic aphasia is present.

Psychological Tests.—In the study of aphasia a great number of elaborate psychological tests have been used, but, for practical differential diagnosis, only a few simple tests are necessary. As far as anomic aphasia is concerned, the test of naming objects is the most important. This test can be improvised easily by choosing objects always at hand, such as a pen, pencil, watch, keys, and coins, and asking the patient to name them. Parts of the body, articles or parts of clothing, and articles of furniture may also be used. It is advisable to have at hand a considerable number of objects, since in mild cases of anomic aphasia only 1 or 2 out of 15 or 20 objects presented may cause any trouble in naming. A discussion of the more elaborate tests can be found in the books by Goldstein [3] and Weisenburg and McBride.[2] Head [1] has outlined several relatively simple tests for use in studying aphasia, and his work offers a good example of the systematic and repeated use of tests in following cases of aphasia over a long period of time.

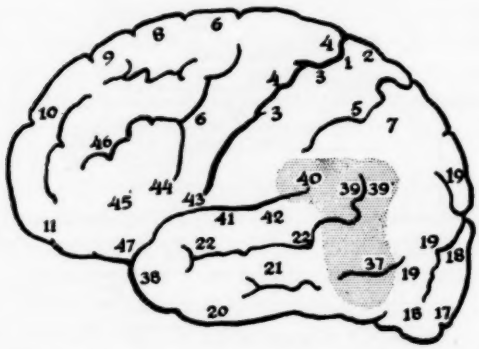

Fig. 2.—Cerebral cortical areas according to Brodmann. Shaded area shows region in which damage in dominant hemisphere results in anomic aphasia.

CEREBRAL LOCALIZATION IN ANOMIC APHASIA

A review of the literature shows much disagreement as to the type, extent, and cerebral localization of the lesion responsible for anomic aphasia. The following different viewpoints on localization have been advocated: (1) generalized cerebral damage; (2) damage to the frontal lobes: (*a*) any part or (*b*) Broca's area (area 44); (3) damage to any part of the dominant cerebral hemisphere; (4) a lesion in the posterior part of the dominant hemisphere, especially in a region made up of the supramarginal gyrus, angular gyrus, and the posterior part of the first, second, and third gyri (areas 40, 39, 37, and posterior parts of areas 21 and 22); (5) a lesion localized to the posterior part of the second and third temporal gyri of the dominant hemisphere (area 37). (See figure 2 for location of areas according to Brodmann.)

Goldstein [3] believes that anomic aphasia (amnesic aphasia, as he calls it) may indicate a generalized damage to the brain such as occurs in arteriosclerosis, general paresis, and Pick's disease, and it is the widespread acceptance of this opinion that has often caused the localizing value of anomic aphasia to be overlooked. He also believes that anomic aphasia may be found in lesions of any part of the frontal lobes in which sufficient damage has been done. Nevertheless, Goldstein makes the following statement about localized lesions: "If amnesic aphasia occurs in a localized affection, the latter usually concerns the temporo-parietal region." As a result of their extensive study of 60 cases of various types of aphasia, Weisenburg and McBride [2] recognized anomic aphasia as a separate and distinct entity but did not come to any definite conclusion as to localization. They leave the impression that anomic aphasia may be caused by a fairly extensive lesion anywhere in the dominant cerebral hemisphere. Such a conclusion is most surprising, since, on reading the detailed neurological case accounts of their five patients, it is found that all of them had lesions in the parietotemporal lobes of the dominant hemisphere; and in four of the cases, homonymous hemianopsia was present to add further proof of the parietotemporal localization.

Kanzer [7] has studied 19 cases of anomic aphasia occurring in association with brain tumors. He concludes that there are two regions of the brain particularly involved in this disorder: namely, the area of Broca and the zone adjacent to the sensory center for sound in the temporal lobe of the dominant cerebral hemisphere. A critical examination of the seven cases that are given to support the view that Broca's area was primarily involved tends to discredit such a conclusion. Of the seven patients, four had right homonymous hemianopsia, which indicates that the lesion extended as far posteriorly as the supramarginal gyrus. Of the other three, two are listed as being frontoparietal and one as a diffuse involvement of the left hemisphere. It would seem, rather, that these cases add support to the claim for localization of the lesion in anomic aphasia to the parietotemporal region of the dominant hemisphere. Charlton Bastian [8] pointed out in a very clear fashion that both the clinical evidence from cases and the subjective experience of speech indicate that recall of words is closely related to the sensory function of the brain and not to the motor function. He located the area concerned with the recall of words in the posterior part of the dominant hemisphere, especially in close proximity to the area for auditory perception, basing this on the fact that speech is first learned largely through hearing. Head [1] has described anomic aphasia under the term nominal aphasia. His classification of this disorder as a separate entity is based on numerous psychological tests, and he shows that in addition to anomia there are often defects in the ability to tell time and in the ability to recall the relative positions of objects in familiar surroundings. He is very definite in his localization of the lesion involved to the region of the angular gyrus (Brodmann's area 39, fig. 2) of the dominant hemisphere.

In his excellent book on agnosia, apraxia, and aphasia, Nielsen [4] presents evidence that anomic aphasia (he uses the term amnesic aphasia) may result from a lesion in-

7. Kanzer, M.: Early Symptoms of Aphasia with Brain Tumors, J. Nerv. & Ment. Dis. 95: 702-720 (June) 1942.

8. Bastian, H. C.: A Treatise on Aphasia and Other Speech Defects, New York, D. Appleton & Company, 1898.

volvement of any of the following structures in the dominant hemisphere (fig. 2): (1) the supramarginal gyrus (Brodmann's area 40); (2) the angular gyrus (Brodmann's area 39); (3) the posterior part of the first, second, and third temporal gyri (Brodmann's area 37 and the posterior parts of areas 21 and 22 [Nielsen calls this the "language formulation area"]); (4) the temporal isthmus. Nielsen is of the opinion that lesions in the supramarginal and angular gyri produce their effect by interference with the function of the temporal isthmus and that the most typical cases of anomic aphasia occur with lesions of the temporal lobe (Brodmann's area 37), such as an otogenic abscess. He states that about one-half of the cases showing lesions of the angular gyrus will also show anomic aphasia, and he presents nine cases that show anomic aphasia with a lesion of the supramarginal gyrus. He considers it only a theoretical possibility that anomic aphasia could ever occur with a lesion of Broca's area.

Mills [8] has argued for the localization of a naming or concept center in the posterior part of the second and third temporal gyri (Brodmann's area 37 and posterior part of Brodmann's area 21, fig. 2) and presents one very typical case of anomic aphasia with a tumor in this region to prove his point. Kleist,[9] studying cases of war injuries, came to localize the disturbances characteristic of anomic aphasia to this same posterior temporal region, and Williams [10] has recently reported a case of anomic aphasia with a focal lesion in Brodmann's area 37. Neurosurgical studies offer further evidence that the lesion resulting in anomic aphasia lies in the posterior part of the temporal lobe and in the lower part of the parietal lobe. In cases of left temporal lobectomy, such as that presented by Dandy [11] in 1931, anomia is a prominent symptom. In this case the entire temporal lobe and the supramarginal and angular gyri were removed; but, as Penfield and Rasmussen [12] have pointed out, the anterior part of the dominant temporal lobe (a portion 5 cm. from the anterior tip measured along the fissure of Sylvius and 7 cm. along the base) can be removed without producing any aphasia.

By direct electrical stimulation of the human cortex, Penfield and Rasmussen have mapped out, in the dominant hemisphere, three areas of "speech arrest" that correspond to those areas in which damage is known to cause aphasia. One of these is Broca's area in the frontal lobe (area 44), another is the posterior part of the temporal lobe (areas 21 and 22), and the third is the supramarginal and angular gyri (areas 40 and 39). It would seem to be significant that stimulation of the latter two areas did not cause as complete an arrest of speech as did stimulation of Broca's area but produced a disorder more like anomia. Excision of large portions of the brain, not including the "speech arrest" areas described above, has been performed in many cases without any aphasia resulting.[12] This would seem to refute the idea that a large lesion in any part of the brain will produce anomic aphasia. Evidence that anomic aphasia does not result from lesions of the frontal lobes is presented in the study, "Selective Partial Ablation of the Frontal Cortex," by the Columbia-Greystone Associates.

The preponderancy of the evidence on cerebral localization as presented above indicates that anomic aphasia results when a cortical or subcortical lesion causes damage to part or all of a definite but rather large area in the posterior part of the dominant hemisphere (fig. 2). This area is made up of the supramarginal gyrus, the angular gyrus, and the posterior part of the first, second, and third temporal gyri. It should be obvious, in generalized cerebral damage, that the area outlined above is damaged and that the resulting anomia is a result of the damage to this localized area and not a result of damage to other parts of the brain.

HOMONYMOUS HEMIANOPSIA AND ANOMIC APHASIA

Despite the fact that many of the typical cases of anomic aphasia presented in the literature have shown right homonymous hemianopsia or at least some restriction of the right homonymous visual fields, the close relationship between this finding and anomic aphasia has not been emphasized. A review of some of the well-known case reports of anomic aphasia shows that right homonymous hemianopsia was present in 3 out of 5 of Head's cases, in 4 out of 5 of Weisenburg's, in 2 out of 5 of Goldstein's, and in 9 out of the 19 cases presented by Kanzer. Furthermore, the typical case reported by Mills [8] had right homonymous hemianopsia as did the excellent case reported by Meyer. In this total of 36 cases, it is noted that 20, or 55%, had right homonymous hemianopsia. It is advisable, therefore, to do careful visual field examinations on all patients with anomic aphasia, since a slight right homonymous field defect is often the first evidence besides the anomia that points to a lesion of the temporoparietal region. This does not mean that all lesions in this region causing anomic aphasia will also cause visual field defects. A lesion of the cortex alone can cause anomic aphasia without any injury to the optic fibers, or a subcortical lesion may push the fiber tract aside and not destroy it.

TWENTY CASES OF ANOMIC APHASIA

The outstanding features of 20 cases of anomic aphasia are summarized in tables 2 and 3. Ten of the 20 cases were due to vascular lesions of one kind or another; 1 case resulted from a subdural abscess following an ear infection; 1 case resulted from a cyst of the temporal horn of the left ventricle; and the other 8 cases were due to brain tumors or to the surgery associated with the treatment of them. This probably represents a fairly typical distribution of the type of lesions that causes anomic aphasia and indicates that anomic aphasia is just as often associated with an expanding intracranial lesion as with a vascular accident. This association of anomic aphasia with brain tumors is especially important, because it is often the first localizing sign found in tumors occurring in what is otherwise a relatively "silent" part of the brain and its recognition may lead to the early diagnosis so necessary for successful treatment. In the past, otogenic

9. Kleist, K.: Gehirn-Pathologie vornehmlich auf Grund der Kriegserfahrungen, in Handbuch der ärztlichen Erfahrungen im Weltkriege, Leipzig, Johann Ambrosius Barth, 1934, vol. 4, pt. 2.

10. Williams, R. R.: Case of Amnesic Aphasia with Focal Lesion in Area 37, Bull. Los Angeles Neurol. Soc. **10**: 75-77 (March-June) 1945.

11. Dandy, W. E.: The Effects of Total Removal of the Left Temporal Lobe in a Right Handed Individual, J. Nerv. & Ment. Dis. **74**: 739-742 (Dec.) 1931.

12. Penfield, W., and Rasmussen, T.: The Cerebral Cortex of Man: A Clinical Study of Localization of Function, New York, The Macmillan Company, 1950.

abscess of the temporal lobe was a frequent cause of anomic aphasia, but the sulfonamides and antibiotics have practically eliminated this.

The 10 cases of anomic aphasia due to vascular lesions showed fewer other signs and symptoms of brain disease, such as headache, seizures, visual field defects, and paralysis, than did the cases due to expanding intracranial lesions. The patients with vascular lesions often complained only of a speech defect, and probably for this reason a correct diagnosis was oftener made than in cases in which other signs and symptoms confused the picture. Case 1 is a good example of a severe anomic aphasia due to a vascular lesion. There were no other localizing signs present except an apraxia of the right hand. The lack of any visual field defects and the history of a luetic infection might have led one to suppose that the anomia was due to a generalized or diffuse cerebral lesion, such as Goldstein [3] has postulated. However, on the basis of the severe anomic aphasia, a lesion in the region of the left angular gyrus was diagnosed; and this was proved first by an air encephalogram, which showed an unusual collection of air in that region, and finally by the postmortem examination, which showed an old focal encephalomalacia.

Cases 11 through 18 demonstrated anomic aphasia occurring as the result of an expanding intracranial lesion in the left temporoparietal region. The symptoms of brain disease were severer in these cases than in the cases associated with vascular lesions. All of them also showed visual field defects consisting of some degree of homonymous hemianopsia. Three of the patients in these eight cases had Jacksonian seizures, and most of them had some weakness, apraxia, or paralysis of some part of the right side. The speech defect was less clear-cut, and some error in the diagnosis of the aphasia was made in all of these cases at one time or another. The average age of patients with expanding intracranial lesions was considerably less than that of patients with vascular lesions. Two patients with tumors were in the older age group (62 years), however, and in one of these (case 16) the diagnosis of brain tumor was missed because the history and the age were so characteristic of a vascular lesion. In case 13 a brain tumor seems to have been caused or brought to light by head trauma. In this case anomic aphasia was present on the first day of the illness and persisted during the remaining three years of the patient's life; yet its localization was ignored; and two craniotomies were done in the frontal region, neither of which was over the main body of the tumor.

In case 19 the excision of the posterior two-thirds of the left parietal lobe, of the posterior one-third of the left temporal lobe, and of all of the left occipital lobe resulted, as expected, in severe anomic aphasia and a complete right homonymous hemianopsia. Nevertheless, this anomic aphasia was mistaken for motor aphasia by several examiners and by the psychologist. As compared with her previous records, the patient showed a pro-

TABLE 2.—*Summary of Twenty Cases of Anomic Aphasia*

Case	Age	Type of Lesion and Location	Visual Field Defect	Other Signs or Symptoms	Errors in Diagnosis of Aphasia
1	67	Cerebral thrombosis. Encephalomalacia, left lower parietal lobe. Syphilis?	None ?	Apraxia, right hand; weakness, right arm; agraphia	No error
2	57	Multiple cerebral thromboses	None ?	Amimia, right; paresis, right arm	No diagnosis made
3	62	Cerebral thrombosis. Region of angular gyrus?	Hemianopsia	Alexia; paresis, right arm and leg	No error
4	53	Cerebral thrombosis? Vascular spasm?	Transient hemianopsia	Alexia	Motor aphasia
5	44	Cerebral thrombosis or embolus	None	Alexia; agraphia	No error
6	61	Generalized cerebral arteriosclerosis	None ?	None	No error
7	79	Generalized cerebral arteriosclerosis	None ?	None	Dysarthria
8	70	Generalized cerebral arteriosclerosis	Constriction	None	"Transient amnesia"
9	31	Left intracerebral hematoma. Encephalomalacia, temporoparietal region	Hemianopsia	Alexia; apraxia, right hand; astereognosis, right hand	Motor aphasia
10	43	Left intracerebral hematoma. Posterior temporal lobe	None ?	Alexia	Motor aphasia
11	19	Subdural abscess, later atrophy, left temporoparietal region	Hemianopsia	Hemiparesis; astereognosis; Jacksonian seizures	Motor aphasia
12	22	Cyst, temporal horn of left lateral ventricle	Hemianopsia	Alexia; hyperreflexia; Jacksonian seizures	Motor aphasia
13	39	Glioblastoma, left temporoparietal lobes and extending into frontal and occipital lobes	Hemianopsia	Jacksonian seizures; alexia; agraphia	Motor aphasia
14	62	Glioblastoma, left temporoparietal region	Hemianopsia	Hemiparesis	Motor aphasia
15	29	Astrocytoma, left temporal lobe	Hemianopsia	Amimia	Diagnosis not made
16	62	Glioblastoma, left parietal lobe	Hemianopsia	Apraxia	Diagnosis not made
17	43	Astrocytoma, left temporal lobe	Hemianopsia	Jacksonian seizures; apraxia; amimia	Motor aphasia
18	19	Cystic tumor. Astrocytoma? Left temporal lobe	Hemianopsia	Weakness, face and arm	Diagnosis not made
19	14	Astrocytoma, left parietal region. Left lobectomy, all of occipital lobe, part of parietal and temporal lobe	Hemianopsia	Weakness of hand; agraphia; alexia	Motor aphasia
20	10	Left hemispherectomy. Astrocytoma, left frontal-parietal region	Hemianopsia	Jacksonian seizures; alexia; hemiparesis	(1) Diagnosis not made (2) Motor aphasia

nounced drop in her score on the I. Q. tests after the lobectomy. As Weisenburg and McBride [2] have pointed out, this is typical of cases of anomic aphasia and is probably due more to the anomic defect than to a real change in intelligence. In case 20 a left hemispherectomy was done in a 10-year-old girl whose dominant hemisphere was assumed to be on the right side. She was left-handed, and a surgical removal of much of the left frontal lobe previously had not caused any defect in speech. After the hemispherectomy was done, the anomic aphasia was not recognized clinically by several examiners and was called motor aphasia by another, but its presence was established by rather extensive "object-naming tests." This case emphasizes that a mild anomia can best be diagnosed by proper testing.

Localization of the Lesion.—These 20 cases offer proof that anomic aphasia results from a lesion involving all or part of the lower parietal and posterior temporal region of the dominant cerebral hemisphere (table 3 and fig. 2). In 13 cases the location of the lesion was proved by surgical exploration or by postmortem examination; in 4 other cases, associated signs and symptoms indicated a similar location of the lesion. No cases were encountered that suggested any other localization. Both cortical and subcortical lesions in this region gave rise to anomic aphasia, and the presence and degree of any visual field defect seemed to give some indication of the extent of the subcortical involvement. Some lesions seem to have started in the parietal lobe, while others were more definitely located in the posterior temporal lobe.

TABLE 3.—*Frequency of Various Findings in Twenty Cases of Anomic Aphasia*

Findings Associated with Anomic Aphasia	No. of Cases	Cases, %
1. Location of Lesion		
a. Lesion in the left temporoparietal region proven by surgery or postmortem examination	13	65
b. Lesion probably located in the left temporoparietal region; other localizing signs present	4	20
c. Generalized cerebral damage, including damage to left temporoparietal region; no localizing signs except anomic aphasia	3	15
2. Visual Field Defect		
a. All types, including one case of transitory changes and one case of marked constriction of fields	14	70
b. Right homonymous hemianopsis; incomplete in most cases (see figure 1 and table 2 for examples)	12	60
3. Error in Diagnosis		
a. Mistaken for some other types of aphasia	16	80
b. Mistaken specifically for motor aphasia	10	50
4. Other Associated Findings		
a. Some motor disturbance, paresis, apraxia, amimia	13	65
(1) Hemiparesis, usually mild	4	20
(2) Paresis or apraxia of arm alone	7	35
(3) Amimia and facial weakness	4	20
b. Jacksonian seizures, right sided	5	25
c. Alexia	9	45
d. Agraphia	4	20

These cases and the literature reviewed previously indicate that a lesion below or anterior to the angular gyrus in the posterior part of the temporal lobe, or a lesion above and anterior to the angular gyrus in the region of the supramarginal gyrus, can produce anomic aphasia even though the angular gyrus itself is not involved. Since, however, the angular gyrus lies more or less in the center of this region and since it very commonly is involved, some such phrase as "in or near the angular gyrus" or "in the region of the angular gyrus" would seem to be a very adequate yet simple way of indicating the most likely location of the cerebral damage in cases of anomic aphasia. The important consideration is to call attention to the fact that the speech difficulty derives from a lesion posterior to the rolandic fissure and not from a frontal lobe lesion.

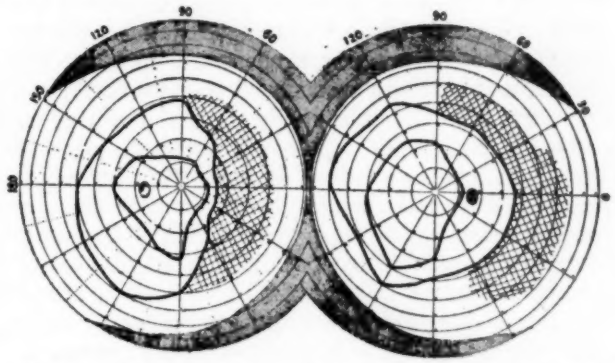

Fig. 3 (case 16).—Relatively extensive visual field defect gives hint of correct diagnosis (parietal lobe tumor) for anomic aphasia.

Visual Field Defects.—Some defects in the visual fields was the finding most commonly associated with anomic aphasia in the cases presented above, being present in 14 out of 20 cases, or in 70%. In 12 cases, or 60%, the visual field defect took the form of a right homonymous hemianopsia, usually incomplete. Of the six patients listed as showing no visual field defect (table 2), only one had special visual field tests done, and it is likely that some changes were missed by gross examination. All patients with expanding intracranial lesions showed definite visual field defects. This suggests that whenever a patient with anomic aphasia is found to have a homonymous visual field defect, the presence of a brain tumor should be suspected. Examples of typical visual field defects associated with anomic aphasia are shown in figures 3 and 4, these being the findings in cases 16 and 17 respectively. The temporal location of the tumor in case 17 is indicated by the upper homonymous quadrant defect as seen in figure 4. In case 16 the relatively extensive visual field defect gives a hint of the correct diagnosis (parietal lobe tumor), though the history was typical for a vascular lesion.

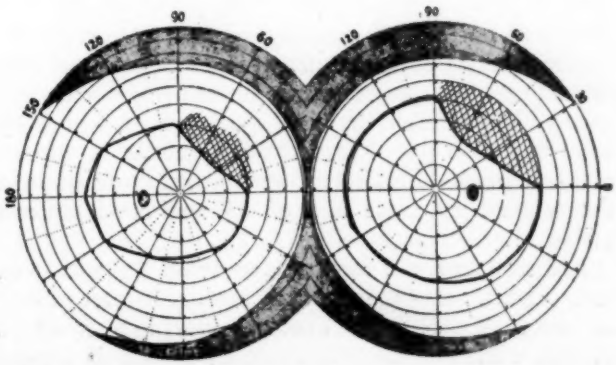

Fig. 4 (case 17).—Typical visual field defect associated with anomic aphasia. Temporal location of tumor is indicated by proper homonymous quadrant defect.

Errors in Diagnosis.—As can be seen from table 3, an erroneous diagnosis of motor aphasia was made by one or more examiners in half of the 20 cases of anomic aphasia reported above. This occurred in some cases be-

cause hesitancy in speech was mistaken for a motor difficulty and the examiner was not aware of the anomia present. Such a mistake was even made in case 19 of parietal, temporal, occipital lobectomy in which the extent of the lesion was known and which did not come anywhere near the frontal motor speech area. In other cases, however, a diagnosis of motor aphasia was made when it was obvious from the record that the examiner knew the speech defect was anomic in character. Such a mistake must have come from a misconception on the part of these examiners that anomia is a mild form of motor aphasia and is due to an "early" lesion on Broca's area (area 44). The final diagnosis as to the location of the lesion completely refutes such a conception. In six other cases, one or more examiners failed to make a correct diagnosis of the patient's speech defect or failed to recognize that any defect was present. In most of these cases some mention of a speech disturbance was made, but no diagnosis was given or any tests made to determine the diagnosis.

In none of the cases was the speech defect defined as completely as would have been possible by doing more careful tests or recording verbatim more of the patient's speech, and in some of the cases it was little more than mentioned. This indicates that more emphasis should be placed on a thorough study of any aphasia, since a correct diagnosis will not only in itself suggest localization of the lesion but may also direct attention to other defects commonly associated with anomic aphasia (amimia, apraxia, and homonymous hemianopsia) that will further define the extent of the lesion present.

SUMMARY

The term anomic aphasia most clearly and correctly designates a form of speech disorder characterized by difficulty in recalling the names of persons and things. Anomic aphasia is a major type of speech disorder standing between sensory aphasia on the one hand and motor aphasia on the other and arising from a defect in the associative processes necessary to language and not from any breakdown in sensory or motor functions. It is often confused with motor aphasia (in 50% of the cases reported in this paper) and at times is misdiagnosed in other ways or overlooked altogether (in 30% of the cases reported in this paper).

Anomic aphasia results when a cortical or subcortical lesion causes damage to a region of the dominant hemisphere in or near the angular gyrus. This area is made up specifically of the supramarginal gyrus, the angular gyrus, and the posterior part of the first, second, and third temporal gyri. A visual field defect, especially an incomplete right homonymous hemianopsia, is more often associated with this type of aphasia than any other neurological finding (in 70% of the cases reported in this paper). Patients with anomic aphasia due to damage from a vascular lesion are less likely to show visual field defects or other neurological findings than are patients with this aphasia due to damage from an expanding intracranial lesion. In cases of anomic aphasia the chances are even that the lesion will be a tumor or some other expanding intracranial lesion.

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HYDROCORTISONE (COMPOUND F) ACETATE OINTMENT IN DERMATOLOGICAL THERAPY

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In a previous short report[1] we presented the first results of our use of topically applied hydrocortisone (compound F) acetate ointment in 19 cases of selected dermatoses. The present paper summarizes our experience with 62 selected dermatological patients treated by local inunction with hydrocortisone acetate in various ointment bases. This total includes further observation in the original 19 cases and of 43 additional patients (table 1).

For this study we were able to select patients from private practice, who, in general, had dermatoses of long standing and were known to be refractory to many forms of topical therapy, including in some instances the topical application of cortisone acetate ointment. Where possible, cases were chosen in which the dermatitis involved symmetrical areas, so that an ointment containing hydrocortisone acetate could be applied to one side and the ointment base alone, without hydrocortisone acetate, to the contralateral side. In those cases in which this "symmetrical paired comparison" was not feasible, as when only a single area was involved, the hydrocortisone acetate ointment was applied for a week or two and the effects were observed. The ointment base alone was then used for an equal period, and any difference in therapeutic effect was noted. The patients were very carefully instructed to apply small and approximately equal amounts of hydrocortisone acetate ointment and the ointment base to the respectively involved sites two or three times daily.

Several different ointment bases were used to incorporate the crystalline 17-hydroxycorticosterone-21-acetate in various concentrations. The bases were composed as follows:

The first, designated by FMB, contained zinc stearate, propylene glycol, polyethylene glycols, and water. The second, designated by LLP, contained 15% lanolin, 10% liquid petrolatum, and white petrolatum. The third base was aquaphor,* which consists of 6% of cholesterol

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The Medical Division of Merck & Company, Inc., Rahway, N. J., supplied the crystalline hydrocortisone acetate in various concentrations in the base consisting of zinc stearate, propylene glycol, polyethylene glycols, and water.

1. Sulzberger, M. B., and Witten, V. H.: The Effect of Topically Applied Compound F in Selected Dermatoses, J. Invest. Derm. **19**: 101, 1952.

TABLE 1.—*Effects of Hydrocortisone Acetate Ointment Compared with Effects of Control Ointment on Symmetrical Sites*

Case	Diagnosis	Age, Yr.	Duration of Dermatoses, Yr.	% Hydrocortisone Acetate Ointment and Base Used *	Duration of Treatment, Weeks	Degree of Improvement †	
						Control Ointment	Hydrocortisone Acetate Ointment
1	Atopic dermatitis	38	36	1% FMB	4	+	+++
2	Atopic dermatitis	16	4	1% LLP	3	+	++
3	Atopic dermatitis	30	20	1% AQ	6	++	+++
4	Atopic dermatitis	22	10	1% FMB	1	+	+++
5	Atopic dermatitis	30	26	1% FMB	4	0	+++
6	Atopic dermatitis	43	30	1% FMB	7	0	++
7	Atopic dermatitis	2	2	1% AQ	9	+	++++
8	Atopic dermatitis	19	18	1% AQ	8	++	++++
9	Atopic dermatitis	29	19	2½% LLP	2	+	+++
				2½% AQ	4	+	+++
				1% FMB	29	++	++++
10	Atopic dermatitis	1½	1	1% LLP	1	++	++
11	Atopic dermatitis	24	17	1% FMB	4	++	+++
12	Atopic dermatitis	24	24	1% FMB	3	++	++
13	Atopic dermatitis	2	1	1% FMB	4	+	+++
14	Atopic dermatitis	23	23	1% AQ	1	+	++
15	Atopic dermatitis	4	1	1% FMB	3	+	+++
16	Atopic dermatitis	21	20	1% AQ	1	W	W
17	Atopic dermatitis	36	35	1% AQ	1	+	++
				1% FMB	1	+	++
18	Atopic dermatitis	28	28	1% AQ	1	W	+++
19	Atopic dermatitis	8½	4	1% LLP	1	0	0
20	Atopic dermatitis	30	29	1% LLP	1	0	0
21	Atopic dermatitis	27	2	1% FMB	4	++	+++
22	Atopic dermatitis	20	7	1% FMB	1	+++	+++
23	Atopic dermatitis	32	1	5% FMB	2	W	W
				1% FMB	1	0	0
				1% LLP	1	W	W
24	Atopic dermatitis	35	35	2½% LLP	1	+	+++
				1% PETRO	1	++	+++
				5% FMB	6	++	+++
25	Atopic dermatitis	24	5	1% AQ	21	+	+++
26	Atopic dermatitis	28	28	1% FMB	1	0	++
				5% FMB	2	++	+++
27	Atopic dermatitis	8	4	1% FMB	1	+	+++
28	Atopic dermatitis	32	1	1% FMB	1	0	0
29	Atopic dermatitis	25	24	1% FMB	4	nsc	+++
30	Atopic dermatitis?	18	8	1% LLP	1	0	0
31	Pruritus vulvae and ani	41	20	1% FMB	5	nc	+++
32	Pruritus vulvae	68	22	1% FMB	3	nc	+++
33	Pruritus ani	11	½	1% AQ	2	nc	W
34	Pruritus vulvae	55	1	1% LLP	2	nc	++
35	Pruritus vulvae	35	1	1% FMB	½	W	W
36	Psoriasis	54	38	1% FMB	3	0	0
37	Psoriasis	15	2	2½% LLP	4	0	0
				5% FMB	4	0	0
38	Psoriasis?	38	3	1% LLP	1	0	0
39	Psoriasis	48	2	1% FMB	3	0	0
40	Psoriasis	50	?	2½% LLP	2	0	0
41	Chronic discoid lupus erythematosus	52	20	1% LLP	3	0	0
42	Chronic discoid lupus erythematosus	35	3	2½% LLP	3	nc	0
				1% FMB	29	nc	0
43	Chronic discoid lupus erythematosus	50	8	2½% LLP	2	nc	0
44	Chronic discoid lupus erythematosus	30	2½	2½% LLP	9	nc	0
45	Widespread discoid or subacute lupus erythematosus	46	7	2½% LLP	1	nc	+
46	Lichen chronicus simplex	62	5	1% LLP	1	nc	++
47	Lichen chronicus simplex	69	10	1% FMB	6	nsc	+++
48	Pemphigus vulgaris	41	3	2½% LLP	2	nc	0
49	Pemphigus vulgaris	52	2	1% FMB	1	nc	0
50	Alopecia areata	46	½	1% AQ	3	nc	0
51	Alopecia areata	71	½	1% AQ	3	nc	0
52	Distinctive exudative discoid & lichenoid chronic dermatoses	38	24	1% AQ	2	0	0
53	Distinctive exudative discoid & lichenoid chronic dermatoses	56	3	1% FMB	2	+	++
54	Distinctive exudative discoid & lichenoid chronic dermatoses	40	½	1% FMB	4	nsc	++++
55	Lichen planus	49	1/12	1% AQ	5	++	++
56	Nummular eczema	19	⅔	1% FMB	1	nc	++
57	Nummular eczema?	66	3	1% LLP	1	+	++
58	Nummular eczema	61	7	1% FMB	4	+	+++
59	Chronic lichenified dermatitis of eyelids	54	9	1% AQ	1	nc	+++
60	Chronic lichenified dermatitis of eyelids	45	5	1% LLP	2	+++	+++
61	Chronic lichenified dermatitis of eyelids	41	1	1% FMB	1	nc	0
62	Allergic contact-type dermatitis?.	59	3	1% FMB	2	+	++

* FMB is the base containing zinc stearate, propylene glycol, polyethylene glycols, and water; LLP contains lanolin, liquid petrolatum, and white petrolatum; AQ is aquaphor,® which consists of 6% of cholesterol esters in petrolatum; PETRO is white petrolatum.

† W = worse; 0 = no change; + = up to 25% improvement; ++ = 25 to 75% improvement; +++ = 75 to 90% improvement; ++++ = 90 to 100% improvement; nsc = no simultaneous control; nc = no control.

esters in a petrolatum base; it is designated by AQ. The fourth base used was white petrolatum, designated by PETRO. The concentrations were 1%, 2½%, or 5%, i. e., 10 mg., 25 mg., or 50 mg. of hydrocortisone acetate per gram of base.

In almost all instances we were able to observe our patients at one to two week intervals. Improvement of the dermatosis under treatment was judged by diminished erythema and scaling, lessened pruritus, and beginning of clearing. When improvement occurred, it was generally obvious to us at the time of the first return visit, one week after treatment was begun. Many of these patients stated that the improvement became apparent within 24 to 48 hours after treatment with the hydrocortisone acetate ointment was started. Improvement was usually maintained during the entire time the hydrocortisone acetate ointment was being used, the longest period to date being 35 weeks. When the topical use of the medication was stopped, the therapeutic effects usually wore off within four to five days. We have been unable to tell if the continued improvement maintained in some cases after stopping the ointment was directly the result of its use or whether spontaneous remission had taken place. While in most of the cases atopic dermatitis improved more than 75%, and some few approached almost complete healing, this progress was not always continuous. Despite continued regular applications of the ointment, there were occasional flare-ups of the dermatitis, after which improvement was again seen.

It is noteworthy that some improvement was observed in most cases of atopic dermatitis with use of the control ointment base alone, used in comparison on the opposite side. However the ointment containing hydrocortisone acetate produced slightly more improvement than the control in 7 cases and considerably greater improvement in 12 cases. At the time of compilation of our data there were several cases of atopic dermatitis in which the original excellent improvement was no longer being fully maintained. We were unable to tell whether mild flare-ups were occurring or the conditions were becoming somewhat refractory to this method of therapy. In other cases the therapeutic effectiveness of the topical application of hydrocortisone acetate ointment was further evidenced by the relapse that followed when the medication was discontinued or the ointment base alone was used in its place, while reapplication of the ointment containing hydrocortisone acetate produced prompt improvement (cases 7, 9, 25, 29, 47, and 54).

We were able to control our observations further by comparing the effectiveness of the hydrocortisone acetate ointment with other topical medications that had previously proved helpful to the patient. It seems worth mentioning that in case 9, atopic dermatitis of 19 years' duration was benefited more by the topical application of hydrocortisone acetate ointment than by any other topical medication. Furthermore, the patient is in better condition than he has been at any other time since the onset of his skin condition, including when he was receiving 200 mg. of cortisone acetate orally per day. In addition, there have been a few cases of atopic dermatitis in which the dose of oral cortisone acetate could be lowered considerably following the topical application of the hydrocortisone acetate ointment.

It was of particular interest that in some of the patients with atopic dermatitis, improvement was apparent not only at the actual site of application of the hydrocortisone acetate ointment but also at distant areas. In certain of these patients after about four to six weeks of comparative therapy the control site would approximate the degree of improvement achieved on the site treated with hydrocortisone acetate. As previously pointed out,[1] this clinical observation of therapeutic effect beyond and removed from the site of application of the hydrocortisone acetate ointment may be related to the findings of Goldman, Preston, and Rockwell,[2] who demonstrated a zone of patch test inhibition extending beyond the immediate area of intradermal injection of a hydrocortisone acetate solution. Another possible explanation for this distant therapeutic effect is that small amounts of the hydrocortisone acetate ointment may have been inadvertently spread to clothing, sheets, pillow cases, or towels, and in turn may have reached the control sites; or body parts covered with the hydrocortisone acetate ointment may have accidentally rubbed against untreated or control sites. Such repeated exposures to minute amounts of hydrocortisone acetate ointment could possibly have some therapeutic effect on the control sites.

Still another possibility exists, namely, that of absorption and systemic effect. Clinical and laboratory studies have been planned in an attempt to ascertain whether or not there is sufficient absorption of the hydrocortisone acetate through the epidermis to produce systemic effects and thus account for improvement in areas other than those of direct inunction.

Moreover the well-known distant beneficial effects sometimes produced by local applications of certain well-established medicaments, which have been so well described by H. Werner Siemens and designated by him as coreaction (*mit-reaktion*) offer yet another possible explanation of the improvement noted in the sites distant from the areas of actual application of hydrocortisone acetate.[3]

In a few of the cases in which an ointment containing more than 1% hydrocortisone acetate was used, it was our impression that the 5% ointment appeared more effective than the 2½% and that the 2½% ointment was more effective than the 1%. In view of the present cost of the hormone these differences in therapeutic effectiveness were not sufficiently marked, however, to warrant the routine use of the stronger concentration. We are in the process of studying this aspect further.

While we were unable to draw any conclusions as to the possible therapeutic advantage of one ointment base incorporating hydrocortisone acetate over another, preferences for either the oilier or the dryer bases were expressed by some patients. Where lubrication was particularly desired, the base containing lanolin, liquid petrolatum, and petrolatum was given the patient. Where a softening effect was desired and the patient was allergically sensitive to lanolin, the hydrocortisone acetate

2. Goldman, L.; Preston, R., and Rockwell, E.: The Local Effect of 17-Hydroxycorticosterone-21-Acetate (Compound F) on the Diagnostic Patch Test Response, J. Invest. Dermat. **18**: 89, 1952.

3. Siemens, H. W.: Ueber ein noch nicht beschriebenes Phänomen bei der einseitigen Behandlung von Hautkrankheiten, Mit 5 Textabbildungen, Der Hautarzt **2**: 439, 1951; Ueber das Behandlungsfenster bei Psoriasis. Ibid. **3**: 453, 1952.

was incorporated in white petrolatum. Aquaphor® was used at a time when we had to prepare our own ointment with hydrocortisone acetate suspension. This was done by incorporating the saline suspension in the aquaphor.® Most patients in our series used the hydrocortisone acetate in the base containing zinc stearate, propylene glycol, polyethylene glycols, and water, which was the one routinely supplied.

It is of particular importance that in no case was there any clinical evidence whatsoever of adverse systemic effects produced by topical application of the drug. Furthermore, there were no instances of allergic contact sensitization to the hydrocortisone acetate.

COMMENT

The therapeutic effectiveness of the topical application of ointments containing hydrocortisone acetate in certain dermatoses, as demonstrated in this series of cases (table 2), is of particular interest and importance for several reasons. First, these findings are in contradistinction to the general lack of effectiveness of cortisone acetate applied locally (with the exception of ophthalmologic use, and the possible exception of its anogenital, palpebral, labial, and perioral [4] application).

Second, the regular application of very small quantities of a 1% concentration of hydrocortisone acetate in the proper ointment base to the affected areas of certain dermatoses is sufficient to maintain both subjective and objective improvement. It is fortunate and advantageous, of course, that these ointments are aesthetically and cosmetically acceptable. They do not stain skin or clothing, generally do not sting or burn when applied, and do not have a disagreeable odor (if any at all). Actually, when well rubbed in, they are hardly visible.

Third, the effectiveness of this compound, topically applied, is apparently without the undesirable effects that can be produced by the systemic administration of this group of hormones. While there are, to our knowledge, no reports on the action of hydrocortisone acetate taken orally in various dermatoses, there is no reason to believe that the effects would be unlike those produced by cortisone acetate.[5]

Fourth, while it is too early to draw conclusions as regards allergic sensitization produced by the repeated topical application of crystalline hydrocortisone acetate, one can venture to predict that the index of sensitization will probably be very low indeed. In not one instance have we seen or heard of an allergic contact dermatitis produced by the topical application of hydrocortisone acetate or by cortisone acetate; nor do we know of any proved case of a drug eruption produced by the oral ingestion or parenteral administration of either of these compounds.

Our experience with the topical application of hydrocortisone acetate (1%) in selected bases leads us to believe that there are no common or serious contraindications to its continued use on small body areas (up to about one-eighth of the total surface) for periods as long as eight months. Of course, as with any new therapeutic agent, prolonged and careful observation is the responsibility of the practitioner. Studies have been planned, designed to find out, if possible, if there are any alterations in bodily physiology or biochemistry as a result of topical applications. In speculation, however, the following facts are evident: Two grams of a 1% concentration of hydrocortisone acetate ointment will cover a very large area of body effectively, and it is unusual for this much to be used in any one day. Two grams of ointment contain 20 mg. of hydrocortisone acetate. Assuming that 1/10 of this hormonal ester is absorbed (and this is really a far-fetched assumption, as probably much less is assimilated through the skin) then only 2 mg. per day will be available for systemic action.

While it may be assumed that the observed therapeutic action of the locally applied hydrocortisone acetate is based on the local hormonal action of the steroid itself on the skin, it is just barely possible that some other mechanism may be responsible for the benefits achieved. Further studies, including examinations of the local biochemical and functional changes produced in the exposed skin areas, will be required to furnish the desired information as to the precise mechanisms by which the local effects are achieved.

TABLE 2.—*Summary of Results of Treatment with Hydrocortisone Acetate Ointment*

Diagnosis	No. of Cases	No. With Improvement *	No. Without Improvement
Atopic dermatitis	30	20	7
Pruritus vulvae and/or ani	5	3	2
Psoriasis	5	..	5
Chronic discoid lupus erythematosus	4	..	4
Widespread discoid or subacute lupus erythematosus	1	1	..
Lichen chronicus simplex	2	2	..
Pemphigus vulgaris	2	..	2
Alopecia areata	2	..	2
Distinctive exudative discoid and lichenoid chronic dermatosis	3	2	1
Nummular eczema	3	3	..
Lichen planus	1	..	..
Chronic lichenified dermatitis of eyelids	3	2	1
Allergic contact dermatitis?	1	1	..

* In three patients with atopic dermatitis and in one patient with lichen planus it is questionable whether the improvement was due to hydrocortisone acetate, since the improvement was equal in the site treated with hydrocortisone and in the control site.

SUMMARY AND CONCLUSIONS

Sixty-two patients with selected dermatoses were chosen for therapy with topical application of hydrocortisone acetate ointment. Hydrocortisone acetate ointment was found to be of definite value in the management of atopic dermatitis, as demonstrated by the eminently satisfactory results in 20 of 30 cases. Although only a very few cases of pruritus vulvae and ani were treated, it is noteworthy that three of five patients were benefited by hydrocortisone acetate ointment. These cases were of prolonged duration, and many other forms of therapy had failed to help. In several cases lichen chronicus

4. Sulzberger, M. B.: Some Aspects of ACTH and Cortisone in Dermatology, Tenth International Congress of Dermatology, London, July, 1952, Excerpta med. XIII Dermatology & Venereology **6**: 364, 1952.

5. Hopkins, J. G., and others: Pituitary Adrenocorticotropic Hormone (ACTH) and Cortisone in Diseases of the Skin, A. M. A. Arch. Dermat. & Syph. **65**: 401 (April) 1952. Kierland, R. R.; O'Leary, P. A.; Brunsting, L. A., and Didcoct, J. W.: Cortisone and Corticotropin (ACTH) in Dermatology, J. A. M. A. **148**: 23 (Jan. 5) 1952. Sulzberger, M. B.; Witten, V. H., and Yaffe, S. N.: Cortisone Acetate Administered Orally in Dermatologic Therapy, A. M. A. Arch. Dermat. & Syph. **64**: 573 (Nov.) 1951. Boland, E. W., and Headley, N. E.: Compound F Used Orally in Patients with Rheumatoid Arthritis, J. A. M. A. **148**: 981 (March 22) 1952.

simplex, nummular eczema, and distinctive exudative discoid and lichenoid chronic dermatosis (Sulzberger-Garbe) were also improved to some degree. In the concentrations used and under the conditions of the study the hydrocortisone acetate ointment was of no value in the treatment of psoriasis, chronic discoid lupus erythematosus, pemphigus vulgaris, and alopecia areata.

In cases in which the response was favorable, improvement occurred within 48 hours to one week after treatment was begun.

Beneficial effects generally wore off within four to five days after application of the hydrocortisone acetate ointment was discontinued. Hydrocortisone acetate ointment is a valuable adjunct in the management of certain dermatoses, particularly atopic dermatitis. It offers obvious advantages over the systemic use of cortisone and corticotropin (ACTH), in that, while it is not as dramatic in producing its beneficial effects, the adverse effects are apparently obviated.

Further studies will be required to elucidate the precise mechanisms by which the local therapeutic effects are achieved.

999 Fifth Ave. (Dr. Sulzberger).

CLINICAL NOTES

EVANESCENT EPIGASTRIC MASS DUE TO MEDIAL PTOSIS OF KIDNEY

Francis H. Straus, M.D., Chicago

Physicians have long been familiar with the physical indications and the much less common disturbances of function accompanying ptosis of a kidney in the vertical plane. Because of the unusual and therefore alarming physical findings that may accompany abnormal medial mobility of the kidney, the following instance appears worthy of being recorded.

REPORT OF A CASE

A 52-year-old housewife came for examination, giving a two year history of rather typical intermittent distress in the right upper quadrant of the abdomen. There had been several episodes of colic, two of which had been followed by questionable slight jaundice. Her history was otherwise noncontributory. Examination showed her to be obese, with a blood pressure of 180/120 mm. Hg and moderate cardiac hypertrophy. There was slight right dorsal, left lumbar scoliosis and moderate tenderness to deep pressure under the right costal margin. The results of the remainder of the examination and routine blood and urine examinations were normal. Cholecystograms showed a poorly functioning gallbladder, with no stone shadows. Plans were made for eventual cholecystectomy and choledochotomy at a convenient time.

One month later, the patient returned, complaining of having found a "lump" in the abdomen. She was immediately examined in a supine position and no mass was palpable. She then volunteered that she could feel the mass only after she had been lying in bed upon her right side. She was therefore turned 45 degrees to the right side, and a pillow was placed behind her back. Immediately, a rounded protuberance was visible and palpable in the midepigastrium. Its left margin was indistinct, while the upper and lower margins and the margin to the right were well defined, smooth, rounded, and slightly tender. The right border of the mass lay 3 cm. to the right of the midline. The palpable portion was estimated to be about 6 by 7 cm. When the pillow was removed and the patient again lay supine the mass remained visible and palpable, but slight pressure upon the right or the lower margin caused it to slip apparently upward and to the left so that it disappeared beneath the left costal margin and could no longer be felt. Pressure in the left flank then did not render it palpable, but it readily reappeared when the patient rotated her body toward her right side. The mass disappeared when the patient sat or stood up.

Results of fluoroscopic examination of the stomach and colon were negative. Stool examinations showed no occult blood. Bone marrow smears and routine blood chemistry and liver function studies were essentially normal. Electrocardiograms showed "left ventricular hypertrophy." The report on intravenous pyelograms was as follows: "Kidney outlines of normal size and position. . . . Kidney pelves, calyces, ureters and bladder are within normal limits."

While these studies gave no clue as to the character of the mass, they served to rule out several more serious possibilities. A subserous or pedunculated leiomyoma of the stomach, a cyst of the tail of the pancreas, or an enlarged ectopic spleen were considered. In view of the predetermined necessity for cholecystectomy and choledochotomy it was decided to avoid further study and determine the character of the mass by exploration at the time of cholecystectomy.

A transverse incision was made 2 in. above the umbilicus, extending from just inside the right costal margin almost to the left costal margin. Inspection and palpation of the left upper quadrant revealed no abnormalities. The spleen was smaller and softer than the palpated mass and was fixed in its normal position well above the costal margin; however, when the gutter to the left of the descending colon was palpated, the left kidney was felt and seen to slip medially beneath the peritoneum until its upper pole impinged on the vertebral bodies. The upper pole then rode anteriorly on the spine until it reached a point to the right of the midline. The kidney seemed to be of normal shape and size. Its mobility in a vertical direction appeared to be no greater than normal. Inasmuch as there had been nothing in the history or examination suggesting that the mobility of the left kidney interfered with the patient's well-being and the palpable, movable mass seemed to be adequately explained, the parietal peritoneum was not incised, and further exploration of the left side did not seem warranted. Choledochotomy and cholecystectomy were completed and the incision closed. The patient made an uneventful recovery.

COMMENT

Prather,[1] in 1948, reported on medial ptosis of the kidney as a new renal syndrome. In his two patients (both slender women) there was distress in the right upper quadrant of the abdomen and flank that was aggravated by lying or sleeping on the left side. In both his patients he was able to demonstrate by postural variation during pyelography that the right kidney slipped past the midline toward the left. In one of his patients the kidney was palpable when the woman lay in the left lateral position. Both were relieved of their symptoms by nephropexy, and later pyelograms indicated control of the medial mobility of the kidney.

In the case reported here, doubtless the character of the shifting mass could have been indicated by postural variation during pyelography. The necessity for laparotomy for another cause gave opportunity for investigation by direct palpation. There appeared to be no adequate reason for nephropexy. This case is reported only because of the striking physical indications that occur with an abnormality that apparently is seldom observed.

122 S. Michigan Ave. (3).

From the Department of Surgery, Presbyterian Hospital.

1. Prather, G. C.: Medial Ptosis of Kidney: New Renal Syndrome, New England J. Med. 238:253-257 (Feb. 19) 1948.

CHEMICAL ENCEPHALOMYELOPATHY

REPORT OF A CASE

Arthur L. Drew, M.D.
and
Kenneth R. Magee, M.D., Ann Arbor, Mich.

This report concerns the results of the inadvertent introduction of dipyrone (novaldin®)[1] into the subarachnoid space. The substance was accidentally substituted for procaine hydrochloride as a spinal anesthetic for delivery. The patient had received the contents of a 2 cc. ampul of the 50% solution intrathecally.

REPORT OF A CASE

R. M., a 25-year-old white housewife, was admitted to the neurology service of the University Hospital in August, 1950. One day prior to admission, the patient terminated a normal pregnancy with the delivery of a normal full term child. The patient was given one ampul of "spinal anesthetic" in the lumbosacral interspace in preparation for the delivery. The patient had no pain until episiotomy repair was being done, at which time procaine hydrochloride was administered locally. She had been rather heavily sedated and slept well after the delivery. Nothing abnormal was noted until the morning of the day of admission, one day after delivery. The patient awoke in a delirious state, with apparent deafness and a flaccid paraplegia. She also had an episode of vomiting. At this time it was discovered that the substance given in the intrathecal injection had not been procaine hydrochloride but dipyrone. The patient was immediately transferred to the University Hospital. Previously, the patient had always been in good health. There was nothing to suggest any underlying neurological disease, and there was no family history of nervous or mental disease.

Examination.—On admission, the patient's blood pressure was 110/70 mm. Hg, the pulse rate varied between 80 and 90, the respiratory rate was 18, and the temperature 99.6 F. General physical examination disclosed no abnormality, except that the liver could be palpated 2 cm. below the right costal margin and there was vague tenderness in the left upper quadrant. Gynecologic consultation disclosed a normal postpartum pelvis. The patient was disoriented, confused, slightly euphoric, circumlocutious, and circumstantial. She stated that she could not hear but occasionally gave a response to softly spoken commands. She could read and follow written instructions well. The optic fundi were normal. There was ptosis on the left, and the left superior rectus muscle was paretic and the right slightly so. Convergence was absent, but this might well have been secondary to an alternating divergent strabismus. The findings strongly suggested bilateral involvement of the oculomotor nuclei, including Perlia's nucleus. There was marked bilateral depression of hearing. The remainder of the cranial nerves were intact. There was a complete paralysis of both lower extremities, with slight increase in tone. The patellar reflexes were hypoactive but symmetrical, and neither achilles tendon reflex could be obtained. There were no pathological plantar responses, but on the left there was slight fanning. The abdominal reflexes were absent. Strength and tone in the upper extremities were normal. The deep tendon reflexes in the arms were hyperactive and equal. Cerebellar function was normal in the upper extremities but could not be tested in the lower extremities because of the paraplegia. Sensory examination revealed impaired sensation to superficial pain, the upper limit of which was an ill-defined level between the dermatomes innervated by the 8th and 10th dorsal spinal nerves. Pain appreciation was greatly diminished in both lower extremities, and there was slight reduction in position and vibration sensations. Superficial touch sensation was normal. There were no sensory changes in the upper extremities. Flexion of the patient's neck evoked pain in the neck, but there was no true nuchal rigidity, and Kernig's sign was negative.

Laboratory Studies.—Examination of the peripheral blood disclosed 4,000,000 red blood cells per cubic millimeter, 13 gm. of hemoglobin per 100 cc., 15,000 white blood cells per cubic millimeter, with a differential count of 82% polymorphonuclear leukocytes, 1% eosinophils, 14% lymphocytes, and 3% monocytes. A catheterized urine specimen disclosed many red blood cells and 10 to 15 white blood cells per high power field but was otherwise normal. The blood serum Kahn test reaction was negative. Lumbar puncture on admission disclosed clear fluid under a pressure of 150 mm. of water (without evidence of subarachnoid block). There were 124 cells, 18 of which were polymorphonuclear cells; the remainder were erythrocytes. Chemical studies of the cerebrospinal fluid disclosed a normal sugar content, a negative reaction to the Kahn test, a total protein content of 47 mg. per 100 cc., a colloidal gold curve of 0011000000, a Mastic test curve of 110000, a 4+ globulin level, and a pH of 7.15. Cystometric examination showed a small capacity bladder, which exhibited uninhibited contractions. There was impaired appreciation of temperature in the bladder. An audiometric examination performed during the second week of hospitalization showed a 50% hearing loss in higher tones in the left ear. Similar but less definite findings were obtained in the right ear. Caloric responses to vestibular stimulation were normal. An electroencephalogram was interpreted as being mildly and diffusely abnormal without definite localization.

Course.—The day after admission the patient became better oriented and hearing improved slightly. The ptosis and paresis of superior gaze remained, but lateral eye movements were normal. Partial return of strength was observed in the dorsiflexors of both ankles and in the quadriceps and hamstring muscles. The patient could move her legs but not against gravity. Patellar and achilles tendon reflexes were strongly hyperactive, with sustained bilateral ankle clonus and positive Babinski signs. Sensation to pin prick had improved, more so on the right. On the third hospital day phlebothrombosis of the right lower extremity developed. Anticoagulant therapy was instituted, and the patient had an uneventful recovery from this complication. On the fifth hospital day the patient began to complain of marked bilateral tinnitus aurium, although the auditory acuity had grossly improved. Sensation remained slightly reduced, but the motor power of the lower extremities was much improved. The patient had had urinary and fecal incontinence since admission, but by the seventh hospital day she was able to have voluntary bowel movements and could control her bladder, although there was still considerable urgency.

The patient's improvement was steady except for the development of a left peripheral facial paresis during the second week of hospitalization. Examination at the time of discharge after 44 days in the hospital disclosed slight weakness in downward and lateral gaze in the left eye but otherwise normal ocular movements. There was a slight residual left peripheral facial palsy. Auditory acuity remained significantly diminished bilaterally. Sensory examination at this time revealed hyperesthesia below the dermatomes innervated by the fourth lumbar spinal nerve in the right leg and second lumbar spinal nerve in the left, with slight hypalgesia in both feet. She could recognize cold but not warmth below the knees. The patient could walk on crutches. There was incomplete return of function and antigravity strength in all muscles in the lower extremities. The hyperactive reflexes and the pathological plantar responses remained.

Reexamination six months after her discharge disclosed remarkable improvement. She was able to do all her housework, drive a car, dance, and even play tennis. She no longer had any visual complaints, and extraocular movements were entirely normal. There was no residual facial weakness, but some bilateral impairment of hearing persisted, although this was not severe. There were no sensory abnormalities. Motor strength was excellent in both upper and lower extremities. Reflexes remained active, and the bilateral Babinski signs persisted. Unsustained ankle clonus was found on the right only. The most recent

From the Department of Neurology, University Hospital and University of Michigan Medical School.

1. Dipyrone (novaldin®) is sodium phenyldimethylpyrazolon-methylaminomethane sulfonate, an analgesic, antipyretic, and antirheumatic agent. It is a white, odorless, crystalline powder of slightly bitter taste, readily soluble in water and only sparingly soluble in ethyl alcohol. It is used in headaches, neuralgia, sciatica, rheumatism, gout, colds, and influenza. It is ordinarily administered in tablet form, but 2 cc. in 50% solution may be given intramuscularly or subcutaneously.

examination, 18 months after the initial accident, revealed only slight nerve deafness on the left and hyperactive reflexes with positive plantar responses, but no other evidence of cranial nerve, sensory, motor, or cerebellar deficit.

COMMENT

From a functional point of view, the patient may be said to have made a complete recovery. The possibility of chronic arachnoiditis and subsequent further neurological difficulties must be considered, but there is no evidence to suggest that any such process has begun. The case is recorded as an example of the consequence of the accidental introduction of an inappropriate drug into the intrathecal space. This cannot be construed as a case of neurological complications following spinal anesthesia, but it should be borne in mind that the error did occur during the course of a spinal anesthetic procedure. Of most interest in the case is the fact that, despite evidence of severe and diffuse involvement of the central nervous system, there has been almost complete restitution of all functions. Most instances of neurological complications following intrathecal injections have not shown this remarkable and satisfactory improvement.

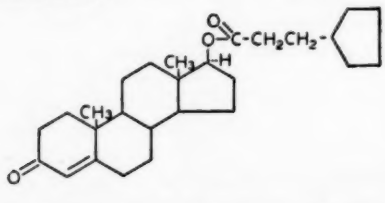
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Testosterone Cyclopentylpropionate.—Δ^4-Androstene-17(β)-cyclopentylpropionate-3-one.—$C_{27}H_{40}O_3$.—M. W. 412.59.—The structural formula of testosterone cyclopentylpropionate may be represented as follows:



Actions and Uses.—The actions and uses of testosterone cyclopentylpropionate are qualitatively the same as those of testosterone propionate, but it possesses the advantage of a more protracted androgenic effect. (See the monograph on testosterone propionate.)

Dosage.—Testosterone cyclopentylpropionate is administered intramuscularly in doses ranging from 10 to 50 mg. at intervals of 7 to 14 days. For induction of pubescence in eunuchoidism, 25 to 50 mg. once weekly may be required for several weeks. In eunuchism, 100 to 150 mg. may be employed at weekly intervals. For relief of constitutional symptoms resulting from deficiency of testicular function, 25 mg. every two weeks may be ample. Maintenance dosage must be determined by trial and error for each patient, utilizing the smallest dose and longest time interval between injections consonant with satisfactory control.

Because of the likelihood of virilism, it is advisable not to exceed a monthly dosage of 150 mg. in the treatment of gynecologic conditions. In the treatment of menorrhagia, 25 mg. administered approximately one week before the anticipated menses usually will control excessive bleeding. For metrorrhagia, 25 mg. should be administered at approximately weekly intervals, but this dose may be repeated at more frequent intervals if necessary to control bleeding. Experience is lacking for recommendations of dosage for palliation of breast cancer.

Tests and Standards.—

Physical Properties. Testosterone cyclopentylpropionate is an off-white, odorless, tasteless, crystalline powder, m.p. 98.0-101.0°. It is freely soluble in alcohol, chloroform, and ether; soluble in vegetable oils; and slightly soluble in water.

Identity Tests: The semicarbazone prepared as directed in the gravimetric assay for testosterone cyclopentylpropionate melts at 216.0-220.5°.

The specific rotation, $[\alpha]$ 25_D, of a solution of testosterone cyclopentylpropionate in chloroform is + 84 to + 90°.

A 0.001% alcoholic solution of testosterone cyclopentylpropionate, prepared as directed in the spectrophotometric assay, exhibits an ultraviolet absorption maximum at about 241 mμ [specific absorbancy, E(1%,1 cm.), about 420].

Purity Tests: Dry about 0.5 gm. of testosterone cyclopentylpropionate, accurately weighed, in a vacuum desiccator over phosphorus pentoxide for 4 hours: the loss in weight does not exceed 0.5%.

Char about 0.5 gm. of testosterone cyclopentylpropionate, accurately weighed, over a low flame. Cool, then add 1 ml. of sulfuric acid, and continue ignition until no carbon remains: the residue does not exceed 0.1%.

Assay: (Testosterone Cyclopentylpropionate) Prepare a 0.001% solution of testosterone cyclopentylpropionate as follows. Transfer to a 250 ml. volumetric flask about 50 mg. of testosterone cyclopentylpropionate, accurately weighed. Fill to the mark with alcohol and mix thoroughly. Transfer to a 100 ml. volumetric flask 5 ml. of the solution, fill to the mark with alcohol, and mix. Spectrophotometrically determine the absorbancy of the final solution in a 1 cm. quartz cell at 241 mμ, using alcohol as a blank. The concentration of testosterone cyclopentylpropionate in the solution in mg./ml. = absorbancy ÷ 42.0. The amount of testosterone cyclopentylpropionate is not less than 95.0 nor more than 105.0%.

Transfer to a 50 ml. Erlenmeyer flask about 0.5 gm. of testosterone cyclopentylpropionate, accurately weighed, and dissolve it in 15 ml. of methanol. Reflux the solution for 2 hours with 15 ml. of 0.225 M semicarbazide acetate. (To prepare the semicarbazide acetate, reflux 2.5 gm. of semicarbazide hydrochloride, 2.5 gm. of anhydrous sodium acetate, and 30 ml. of methanol for 2 hours, chill, filter to remove sodium chloride, and adjust the filtrate with methanol to a volume of 100 ml.) Cool to room temperature and pour into 400 ml. of ice-water. Let the mixture stand for 1 hour in the cold and filter. Dry the precipitate for 4 hours at 105°, cool, and weigh. Each gram of semicarbazone formed is equivalent to 0.8785 gm. of testosterone cyclopentylpropionate. The amount of testosterone cyclopentylpropionate is not less than 95.0 nor more than 105.0%.

Dosage Forms of Testosterone Cyclopentylpropionate

SOLUTION. *Identity Tests:* The semicarbazone formed in the assay melts at 210.0-220.5°.

Assay: (Testosterone Cyclopentylpropionate) Transfer to a 50 ml. flask a volume of solution, accurately measured, equivalent to 50 mg. of testosterone cyclopentylpropionate and add 3 ml. of 0.225 M semicarbazide acetate prepared as directed in the gravimetric assay for testosterone cyclopentylpropionate in the monograph for testosterone cyclopentylpropionate. Reflux for 2 hours and cool to room temperature. Add 10 ml. of iso-octane (2,2,4-trimethylpentane) and pour into 100 ml. of ice-cold water with vigorous agitation. Freeze the water layer and pour the oil layer through a tared sintered glass or Gooch crucible. Wash the surface of the ice with two 3 ml. portions of iso-octane and pour them through the crucible. Suck air through the crucible until dry. Melt the ice layer but keep the temperature of the melt as low as possible. Filter through the same crucible. Suck air through the crucible until dry. Wash the residue with five 3 ml. portions of cold iso-octane. Suck air through the crucible until dry. Wash with two 10 ml. portions of ice-water. Dry at 105° to constant weight (about 4 hours). Each gram of semicarbazone formed is equivalent to 0.8785 gm. of testosterone cyclopentylpropionate. The amount of testosterone cyclopentylpropionate is not less than 95.0 nor more than 105.0% of the labeled amount.

The Upjohn Company, Kalamazoo, Mich.

Solution Depo-Testosterone Cyclopentylpropionate in Oil: 10 cc. vials. A solution in cottonseed oil containing 50 mg. or 100 mg. of testosterone cyclopentylpropionate in each cubic centimeter. Preserved with 0.5% chlorobutanol.

Purified Corticotropin.—Purified corticotropin is prepared by the adsorption of the corticotropin from a dilute acetic acid solution on oxycellulose and the subsequent elution of the adsorbed material with dilute hydrochloric acid. This method yields a product having 10 to 40 times the adrenocorticotropic activity of an equivalent weight of corticotropin.

Purified corticotropin is assayed biologically by measurement of the adrenal ascorbic acid depletion response in hypophysectomized rats. Comparison is made to the Provisional U. S. P. Corticotropin Reference Standard, the injections being made

intravenously as with corticotropin. On subcutaneous or intramuscular injection in patients, however, purified corticotropin produces a greater clinical effect unit for unit than does corticotropin; thus 1 U. S. P. unit of purified corticotropin produces a clinical effect attained by 3 or 4 U. S. P. units of corticotropin. But when administered intravenously, one U. S. P. unit of purified corticotropin as measured by rat assay produces the same range of clinical response as one unit of corticotropin. The exact reason for this discrepancy in response is unknown. It has been hypothesized that corticotropin carries with it some factors which permit more rapid enzymatic destruction in muscle or skin. These factors are thought to be absent, or present in lesser quantity, in purified corticotropin. For the convenience of physicians, the potency of purified corticotropin is expressed in terms of clinical activity equivalent to a specified number of U. S. P. units of corticotropin, so that treatment may be changed from corticotropin to purified corticotropin without gross adjustments in dosage requirement.

Actions and Uses.—See the monograph on corticotropin, New and Nonofficial Remedies 1952, p. 360. Purified corticotropin has the advantage of causing fewer sensitization reactions than corticotropin. When administered in the form of a gel containing 150 mg. of gelatin per cubic centimeter, the total daily dosage of purified corticotropin may be given in one dose and adrenocorticotropic activity persists for approximately 18 to 24 hours.

Dosage.—As the dosage of purified corticotropin is expressed in clinical equivalents of U. S. P. units of corticotropin, it should be employed in the same dosage as corticotropin when administered intramuscularly or subcutaneously. If administered by the intravenous route, three clinical equivalents of purified corticotropin must be administered to obtain the same range of clinical activity as obtained with each U. S. P. unit of corticotropin. As the gel, the entire daily dosage may be administered intramuscularly or subcutaneously at 24 hour intervals.

The Wilson Laboratories, Chicago.

Purified Corticotropin-Gel: 5 cc. vials. When administered intramuscularly or subcutaneously, each cubic centimeter is clinically equivalent to 20, 40, 80, or 100 U. S. P. units of corticotropin. Preserved with 0.5% phenol.

Vitamin B_{12}-U.S.P. (See New and Nonofficial Remedies 1952, p. 470).

Abbott Laboratories, North Chicago, Ill.

Solution Bevidox Crystalline: 10 cc. vials. An isotonic solution containing 30 μg of vitamin B_{12} in each cubic centimeter. Preserved with 0.01% benzethonium chloride.

Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Solution Crystalline Vitamin B_{12}: 10 cc. vials. A saline solution containing 50 μg of vitamin B_{12} in each cubic centimeter. Preserved with 0.5% phenol.

Diphtheria and Tetanus Toxoids with Pertussis Vaccine, Combined (See New and Nonofficial Remedies 1952, p. 397).

E. R. Squibb & Sons, Division of Mathieson Chemical Corporation, New York.

Diphtheria and Tetanus Toxoids and Pertussis Vaccine, Combined: 1.5 cc. (one immunization: three 0.5 cc. injections) and 7.5 cc. vials (five immunizations). Contains 50,000 *H. pertussis* organisms in each cubic centimeter with diphtheria and tetanus toxoids. Preserved with thimerosal 1:10,000.

Pyrilamine Maleate (See New and Nonofficial Remedies 1952, p. 12).

The Bowman Bros. Drug Company, Canton, Ohio.

Tablets Statomin Maleate: 25 mg.

Thiamine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1952, p. 466).

The Bowman Bros. Drug Company, Canton, Ohio.

Tablets Thiamine Hydrochloride: 3 mg., 5 mg. and 10 mg.

Meth-Dia-Mer-Sulfonamides (See New and Nonofficial Remedies 1952, p. 103).

Boyle & Company, Los Angeles.

Tablets Tersulfas: 0.5 gm. Each tablet contains 0.167 gm. each of sulfadiazine, sulfamerazine, and sulfamethazine.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

RALPH E. DE FOREST, M.D., *Secretary.*

MIRACLE HEARING AID

In keeping with the Council's obligation to provide physicians with information regarding various devices, investigation of this device was undertaken although it was not submitted to the Council for consideration.

The Miracle Hearing Aid manufactured by Miracle Hearing Aid, Inc., 587 Main St., East Orange, N. J., consists of a piece of wire 1.46 mm. in diameter shaped to form an elongated U, with a stem from the bottom of the U that terminates in a tapering spiral of five turns. The over-all length from the end of the spiral to the opening of the U is 30 mm. The greatest diameter of the spiral is 4 mm., and the distance between the uprights of the U is 2.5 mm. The wire is silver colored, springy, and similar to that of a small safety pin. (The advertising states that it is "made of precious metals.") In addition to the piece of wire, about two dozen thin rubber disks (thickness 0.25 mm.; diameters from 10 to 15 mm.) are provided in a plastic case. Each disk has a hole in the center. The instructions direct that the U-end of the wire be passed through the hole and the disk slipped down to the first turn of the spiral. In this position the rubber disk is approximately at right angles to the wire spiral.

The instructions describe the insertion of the Miracle Hearing Aid into the ear canal. The dimensions are such that if it is inserted until the rubber diaphragm just enters the external auditory meatus, the rounded tips of the U will be just at or beyond the average position of the eardrum. If eardrum, malleus, and incus are all missing, one tip might come in contact with the stapes.

It is clear from the instructions that the rubber disks are expendable and that additional disks must be purchased occasionally. The advertising correctly states that the device is not an electrical instrument, that it has no batteries, cords, ear buttons, or plastic molds, and that it is "utterly unlike the old style hearing aids."

On the other hand, the claim that it is an "amazing and revolutionary discovery" is highly questionable. The device can benefit hearing in one of two ways. In some cases, it may break through a plug of wax while being inserted; in other cases, if the drum is absent and the device fortunately placed, one tip may come into direct contact with the stapes. In the latter case, it might act like a Pohlman prosthesis (plastic eardrum). If the drum is present, however, the tip is likely to touch it, and there is serious danger of rupture of the drum if the person wearing the device should receive an accidental blow on the side of the head.

The probability that a given patient will present the particular combination of anatomic and pathological conditions for which the device might be appropriate is so small, according to evidence obtained by the Council, that the extravagant advertising is unjustified. In the opinion of the Council, the instructions given with the device are inadequate to explain its usefulness, risk and danger.

The Council on Physical Medicine and Rehabilitation, therefore, voted that the Miracle Hearing Aid is not in conformance with the principles by which the Council declares hearing aids acceptable.

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REPORT OF THE ADVISORY COMMITTEE ON INTERNSHIPS

The complete report of the Advisory Committee on Internships that was presented to the House of Delegates at the Denver meeting appears in this issue (page 499). This committee was appointed by the Council on Medical Education and Hospitals in 1951 to study the internship in its broadest aspects and to define its place in present-day medical education. That the committee has done its work well is evident on reading the report.

After reviewing the general and specific problems that were considered by the committee, the report describes the manner in which the study was conducted and summarizes the results. Emphasis is placed on the importance of a staff that recognizes and is prepared to assume its full responsibility for teaching in a sound intern educational program. This fundamental concept is emphasized in the statement attributed to one of the members of the committee that "a hospital staff that teaches is the conscience of the profession." The report also examines the dual nature of the internship and points out that the service and educational aspects are not inconsistent but, in point of fact, complementary. In view of the emphasis that has been given to the subject in some discussions of the internship, this clear statement by the committee is most helpful.

The report throughout is characterized by a forçeful, lucid presentation of the major and lesser problems relating to the internship and of the committee's recommendations for meeting them. That the report will be considered an important milestone in the progress of medical education in this country can hardly be doubted. It is commended to the attention of all interested in or concerned with intern education.

MISUSE OF OPHTHALMIC ANESTHETIC OINTMENTS

The misuse of ophthalmic anesthetic ointments, which are often employed without medical authorization for the treatment of abrasions of the cornea, chemical burns of the corneal epithelium, foreign bodies, and ulcers of the cornea, is the subject of a number of recent communications. According to a report by Wyman,[1] in no other part of the body are anesthetic ointments prescribed so liberally by physicians or used so generally by patients as in the eyes for the treatment of some of the commoner eye diseases.

Ever since the introduction of cocaine into ophthalmological practice nearly three-quarters of a century ago, it has been recognized that frequent applications of topical anesthetics to the eyes retard the healing of the corneal epithelium. Gundersen and Liebman [2] during the past decade studied the effect of local anesthetic solutions on the eyes of guinea pigs and concluded that 10% cocaine hydrochloride, 4% cocaine hydrochloride, 0.5% tetracaine (pontocaine®) hydrochloride, 1% butacaine (butyn®) sulfate, 1% phenacaine (holocaine®) hydrochloride, and 4% larocaine hydrochloride delayed or retarded healing of the corneal epithelium in varying degrees. Similar responses also occurred after the use of 0.5% tetracaine hydrochloride and 1% phenacaine hydrochloride in ointment base. Marr [3] and his associates independently found that 2% butacaine sulfate and 0.5% tetracaine hydrochloride retarded the healing of epithelial defects in the corneal epithelium of rats. Moreover, several investigators have reported that the retardation in healing of corneal abrasions that results from the local application of various ophthalmic ointments is due to the presence of wool fat (lanolin), an important component of ophthalmic ointment bases. Heerema and Friedenwald [4] observed that application of U. S. P. wool fat to the eyes of rats markedly inhibited the healing of the corneal epithelium and that when U. S. P. white petrolatum was used a similar inhibition was produced, but to a lesser degree.

Dozier and Renken [5] point out that it is common practice for physicians to instill anesthetic ointments in the conjunctival cul-de-sac of patients after the removal of foreign bodies in the cornea or for the treatment of corneal abrasions. Some physicians instruct patients to use anesthetic ointments for the relief of ocular pain, regardless of the cause, on a "whenever necessary" basis. In such instances the affected eye is frequently uncovered and the unprotected, anesthetized cornea exposed to possible additional trauma, especially since the winking reflex is diminished. On the other hand, many patients will reserve ophthalmic anesthetic ointments, once the original purpose for their use has terminated, in a corner of the family medicine cabinet for future self-medication. Should ocular pain occur in the patient himself or in

1. Wyman, G. J.: Use and Abuse of Ophthalmic Anesthetic Ointments, Illinois M. J. **102**: 314 (Nov.) 1952.

2. Gundersen, T., and Liebman, S. D.: Effect of Local Anesthetics on Regeneration of Corneal Epithelium, Arch. Ophth. **31**: 29 (Jan.) 1944.

3. Marr, W. G.; Wood, R. M., and Storck, M.: Effect of Some Agents on Regeneration of Corneal Epithelium, Am. J. Ophth. **34**: 609 (April) 1951.

4. Heerema, J. C., and Friedenwald, J. S.: Retardation of Wound Healing in the Corneal Epithelium by Lanolin, Am. J. Ophth. **33**: 1421 (Sept.) 1950.

5. Dozier, H. B., and Renken, P. W.: Use and Abuse of Ophthalmic Ointments, South. M. J. **45**: 1071 (Nov.) 1952.

some other member of the family, the anesthetic ointment will again be employed haphazardly for the temporary relief of pain. Thus relieved, patients are tempted to delay seeing their physicians and are encouraged to postpone treatment of serious eye diseases in the process of evolution. Furthermore, local anesthetics are potential sensitizers, and when used in ophthalmic ointments may produce allergic reactions.

The fact that ophthalmic anesthetic ointments are frequently sold to patients without benefit of medical authorization should make all physicians conscious of the possible misuse of these preparations. Although physicians cannot control the indiscriminate use of ophthalmic anesthetic ointments by others, they are nevertheless in a position to make their patients cognizant of the dangers of promiscuously utilized, self-prescribed ophthalmic anesthetics.

THE FIRST DAY OF LIFE

That the first day of life occupies a unique position in relation to the possibilities for survival of newborn infants is apparent from a perusal of infant mortality trends. Although there has been a remarkable decrease in rate of death in the first year of life during the past quarter of a century, the number of infants dying in the first 24 hours of life has diminished but little. During 1950, 534 of the 47,680 newborn infants of one of the four largest cities in the United States, a city in which 95% of infants are born in hospitals and only a small number are delivered by midwives, failed to live beyond their first day of life.

Fischer [1] declares that, despite the efforts of a variety of public and private agencies to meet the problem, the responsibility for its solution rests on the shoulders of individual physicians. It is only through their powers of observation and their clinical judgment and skill in detecting and correcting anatomic and physiological abnormalities that it will be possible to reduce mortality of the newborn in the United States. Although prematurity, asphyxia, atelectasis, birth injuries, and congenital malformations are leading causes of neonatal death, a number of factors greatly influence the infant's chance of survival. Among these are the type of prenatal care obtainable, the prevention and elimination of maternal infections, adequate maternal nutrition, and careful, skillful delivery with a minimum of interference and with a minimum of side-effects traceable to analgesia and anesthesia.

The establishment and maintenance of continued extrauterine respiration is of cardinal importance to newborn infants. Fortunately, the vast majority of infants respond successfully to sensory stimuli set in motion by exposure at birth. Ordinarily, simple postural drainage and gentle suction are all that are required, but for infants whose respiratory reflexes are damaged or impaired, resuscitation is necessary. If there is evidence of blocking by aspirated material, direct laryngoscopy and tracheal suction may prove lifesaving. Mouth-to-mouth insufflation administered for long periods has occasionally seemed to turn the tide in favor of ultimate recovery.

During the initial examination of a newborn infant, a careful search is made for bleeding points, the presence of jaundice, and the presence of heart murmurs and gross pulmonary lesions; the size of the liver and spleen are determined, the state of muscle tone ascertained, and adequacy of motion of the extremities observed. Gross evidence of congenital malformation or signs of birth trauma are sought. At this time the required prophylactic medicament is applied to the infant's eyes, the necessary identification procedures are followed, and the infant is placed in a warm, humid atmosphere, with oxygen at hand. A more complete examination is performed later that same day.

A thorough, painstaking physical examination within 24 hours of birth will disclose many of the conditions responsible for early death. Attention should be directed not only to the anterior fontanelles but to the eyes, ears, nose, lips, and palate for possible congenital defects. Congenital anomalies tend to be multiple rather than single, and the presence of a superficial anomaly should lead to a thorough investigation of anomalies hidden elsewhere in the body. It is also possible at this time to detect gross abnormalities of the genitalia, including such entities as pseudohermaphroditism, epispadias and hypospadias, undescended testicles, scrotal hernia, and hydroceles. Moreover, gross disparity in respiratory excursion and apparent cardiac shift should encourage roentgen studies to determine possible congenital cysts, spontaneous emphysema, diaphragmatic hernia, and other abnormalities.

As for heart sounds, Fischer asserts that nearly one-third of all newborn infants evince audible murmurs shortly after birth, many of which are functional and soon disappear; conversely, some of the more dangerous cardiac anomalies and lesions display inaudible murmurs at birth, only to be noticed some days or even months later. The presence of anemia, jaundice, or infection is an indication for hematological study. Finally, it is pointed out that infants born of diabetic mothers and those delivered postmaturely or by cesarean section pose special problems for physicians that should be given particular attention.

1. Fischer, C. G.: The First Day of Life: The Physician's Responsibility, M. Clin. North America 36: 1561 (Nov.) 1952.

ORGANIZATION SECTION

THE PHYSICIAN'S FEDERAL INCOME TAX

Federal income taxpayers on a calendar year basis must on or before March 15 do two things: 1. They must file their final returns for the year 1952. 2. They must file a declaration of estimated tax for 1953.

Copies of appropriate forms have already been distributed to prior taxpayers, together with a small booklet which presents the general requirements of the law. Physicians who are for the first time subject to the requirements of the federal income tax law may obtain the necessary forms from the office of the Director of Internal Revenue having jurisdiction.

GROSS INCOME

A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, assuming that the return is on a cash receipts and disbursements basis, plus such money as he has received from investments and from other sources.

If a physician receives a salary as compensation for services rendered and in addition thereto living quarters or meals, the value to the physician of the quarters and meals so furnished ordinarily constitutes income subject to tax. If, however, living quarters or meals are furnished for the convenience of the employer, the value thereof need not be computed and added to the compensation otherwise received by the physician unless such quarters and meals are furnished as a part of compensation.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. As far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service, and the services of attendants, are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs, and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture, and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical, and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment, and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation deductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal, or average rates of depreciation, the following percentages have been suggested: automobiles, 25% a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments, and diagnostic apparatus, 10% a year; office furniture, 5% a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in each case.

Dues.—Dues paid to societies of strictly professional nature are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are generally held to constitute personal expenses and as such are not deductible. If, however, membership in social organizations, such as a country club, is maintained both for personal and professional or business purposes and if evidence can be produced to substantiate the claim that a part of the expenses of such membership was incurred for business purposes, then it would seem that these latter expenses would be deductible. Further discussion of this particular aspect of the federal law will be found in a subsequent paragraph dealing with the deductibility of entertainment expenses.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals, and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Entertainment Expenses.—The deductibility of entertainment expenses, when incurred for business purposes, has been upheld, as applied to an actor, in the case of *Blakmer v. Commissioner*, 70 F. (2d) 255. In the case of *Jacobson*, 6 T.C. 1048, the taxpayer was allowed a deduction of expenses incurred for entertaining clients and employees of his law firm. The deductibility of such expenses by an attorney came before the U. S. Tax Court in the case of *Clyde A. Armstrong v. Commissioner*, decided Aug. 29, 1947, 6 TCM 997. In a memorandum opinion rendered by Judge Opper, this was said:

> Taxpayer, a Pittsburgh attorney, became a member of the University Club and the Duquesne Club in order to have available facilities for the entertainment of his clients; his purpose in joining the clubs was not particularly to make contacts productive of new business. In 1942, 1943 and 1944 the Commissioner disallowed deductions representing club dues, but allowed 50 per cent of the house bills incurred by taxpayer at each of the clubs during those years. The court finds that taxpayer used the club facilities not less than 50 per cent of the time for entertaining clients and other purposes incident to the practice of his profession, and allows the deduction of dues to that extent.

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association.

In the December 1948 issue of the *Medical Annals of the District of Columbia*, page 697, there was published correspondence that had passed between the secretary of the Medical Society of the District of Columbia and the Internal Revenue Agent in the Baltimore Division, Treasury Department, in which the latter stated that if entertainment expenses incurred by a physician have a direct relation to the production of income, and can be supported by the taxpayer, they will be taken into consideration in determining his net taxable income.

Directors of Internal Revenue in several jurisdictions have questioned the right of physicians to deduct entertainment expenses, contending that it is unethical for a physician to make expenditures of this character. The Judicial Council of the Association, in its report to the House of Delegates at the Los Angeles, 1951, meeting said in part:

"The Council does not consider such expenditures as *per se* unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable." This report was approved by the House of Delegates (*J. A. M. A.* 147:1686, Dec. 22, 1951).

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeur's wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

Surgical Uniforms.—Amounts expended by surgeons for the purchase and maintenance of distinctive types of uniforms which are not adaptable to ordinary wear and which are required to be worn while on duty are deductible as ordinary and necessary business expenses.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. An individual taxpayer can deduct such contributions only to the extent that they do not exceed 20% of his adjusted gross income. The physician may not deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Bad Debts.—Physicians who make their returns on a cash receipts and disbursements basis, as most physicians do, cannot claim deductions for bad debts.

Taxes.—Taxes generally, either federal or state, are deductible by the person on whom they are imposed by law. Both real and personal property taxes are deductible; but so-called taxes, more properly assessments, paid for local benefits, such as street, sidewalk, and other like improvements, imposed because of and measured by some benefit inuring directly to the property against which the assessment is levied, do not constitute an allowable deduction from gross income. Physicians may deduct state gasoline taxes and state sales taxes. In some states sales taxes are imposed on the seller, but if they are passed on to the buyer the latter may deduct them.

State income and use taxes are deductible; federal income taxes are not. Federal import, excise, or stamp taxes are deductible only to the extent that they are attributable to business activities. State automobile license fees are deductible. If a state or local fee is imposed for regulatory purposes, and not to raise revenue, the fee may not ordinarily be deducted as a tax. If such fees, however, are classifiable as a business expense they are deductible as such. Annual registration fees imposed on physicians probably come within the category of regulatory fees and should be deducted as a business expense rather than as taxes. Local and state occupational taxes imposed on physicians are deductible either as taxes or as a business expense, depending on the purpose for which the tax is imposed.

The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Medical Expense.—A taxpayer may deduct amounts in excess of 5% of adjusted gross income expended for medical, dental and hospital expense for himself, his spouse or a dependent, not compensated for by insurance or otherwise, including amounts paid for health and accident insurance, according to a prescribed formula. This 5% limitation does not apply with respect to medical expenses for the care of the taxpayer or his spouse if either has reached the age of 65 before the close of the year. The law limits the deduction to a maximum of (*a*) $1,250 if the taxpayer claims only one exemption; (*b*) $2,500 if the taxpayer is a single person or if married and filing a separate return and claims more than one exemption; (*c*) $2,500 if the taxpayers are married and file a joint return and claim two exemptions, $3,750 if three exemptions are claimed and $5,000 if four or more exemptions are claimed. It has been held that the cost of installing a stair seat elevator in a home, necessitated by a heart condition, does not constitute a deductible medical expense.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

Sale of Spectacles.—Oculists who furnish spectacles, etc., should enter as income money received from such sales and deduct as an expense the cost of the article sold.

FEDERAL MEDICAL LEGISLATION

Commission on Government Reorganization

In S. 106 Senator Ferguson (R., Mich.) proposes to establish a new 12-member commission similar to the Hoover Commission. Four members would be appointed by the President, four by the Speaker of the House, and four by the President of the Senate. Half of each group would come from public life and half from private life. The commission would report to Congress not later than Feb. 1, 1954, concerning: (1) federal services that could be performed by state and local government or services in competition with private enterprise and that could be eliminated as federal functions; (2) duplications and overlapping in federal functions with accompanying recommendations for economy and improving administration. The proposal is identical with that of Congressman Brown (R., Ohio) in H. R. 992.

Federal Aid to States for Promoting Voluntary Health Insurance

Senators Hill (D., Ala.) and Aiken (R., Vt.) propose in S. 93 subsidization of prepayment plans for hospital and medical care for those unable to pay premiums. Federal and state funds would be used to survey (*a*) the needs for diagnostic facilities; (*b*) mental, tuberculosis, and chronic disease facilities; (*c*) areas where there is a shortage of physicians; and (*d*) the extent of enrollment of voluntary prepayment health insurance plans. Funds could be used to finance the cost of plans for improving any of the foregoing conditions. Services would include diagnostic inpatient and outpatient care, but hospital stay would be limited to 60 days annually. The Surgeon General of the Public Health Service would administer the plan, establish standards, and allocate the federal funds. "Service cards" would be issued to persons whose insurance is subsidized. This bill is identical to S. 2171 in the 82nd Congress by the same authors. The bill was referred to the Labor and Public Welfare Committee.

Epilepsy Institute

Senator Langer (R., N. D.) in S. 156 proposes an addition to the National Institutes of Health of a separate national epilepsy institute to work entirely in research on the cause, prevention, methods of diagnosis, treatment, and restoration of epileptics. This bill was referred to the Committee on Labor and Public Welfare.

Cancer Research

The world's outstanding experts in cancer would be assembled in a supreme effort to discover the means of curing and preventing cancer in a measure (S. 188) introduced by Senator Neely (D., W. Va.). The President would be authorized to spend 100 million dollars for this purpose. The bill was referred to the Labor and Public Welfare Committee of the Senate. In the House, Representative Rooney (D., N. Y.) introduced an identical measure in H. R. 583, which was referred to the House Committee on Foreign Affairs.

Crediting Services in Armed Forces of Cobelligerents in Doctor Draft

Senator Young (R., N. D.) proposes in S. 70 to give credit for service in the armed forces of cobelligerents in determining obligation under the doctor draft. Credit would be given for enlisted or officer services and would automatically place this group in Class IV of the present Public Law 779. This was referred to the Armed Services Committee and is identical with H. R. 97 by Congressman Burdick in this Congress previously reported.

Standing Senate Committee on Veterans' Affairs

Senator Ferguson (R., Mich.) proposes in S. Res. 24 to establish a permanent standing committee in the Senate to handle all matters affecting veterans. Legislation in the Senate at the present is divided by the Committee on Labor and Public Welfare and the Committee on Finance. In the House all legislation concerning veterans is referred to a single committee on Veterans Affairs. This measure was referred to the Rules and Administration Committee.

Coast Guard Medical Care at Naval Hospitals and Dispensaries

When Public Health Service facilities are not available, coast guardsmen and their dependents would be authorized to receive hospitalization, medical advice and outpatient treatment at naval hospitals and dispensaries in a measure (S. 33) proposed by Senator McCarran (D., Nev.). This measure was referred to the Senate Armed Services Committee.

Transferring Administration of Indian Hospitals to Public Health Service

Congressman Walter H. Judd, a physician from Minneapolis, in H. R. 303 proposes to transfer the responsibility for the health of Indians from the Bureau of Indian Affairs to the U. S. Public Health Service. This was referred to the Interior and Insular Affairs Committee. This bill is identical to H. R. 1057 of the 83rd Congress; S. 2780 of the 82nd Congress, and, in purpose, to H. R. 6908 and H. R. 7232 of the 82nd Congress. The Committee on Legislation of the American Medical Association in March 22, 1952, voted to actively support S. 2780 of the 82nd Congress. On April 14, 1952, the Executive Committee of the Board of Trustees of the A. M. A. approved the action of the Committee on Legislation on S. 2780 of the 82nd Congress.

Department of Health

Congressman Hoffman (R., Mich.) proposes in H. R. 301 to establish a department of health with a secretary of cabinet status appointed by the President and confirmed by the Senate. A policy advisory board would be established composed of the Secretary of Defense, Administrator of Veterans' Affairs, and the Surgeon General of Public Health Service. Grouped in the department of health would be: (*a*) the Public Health Service; (*b*) the Department of Medicine and Surgery of the Veterans Administration and all hospitals, outpatient facilities, and functions of the VA, except the establishment of eligibility for medical care and hospitalization; (*c*) hospitals and medical facilities in the Canal Zone; (*d*) all hospitals and other medical facilities of the armed services in the continental United States, except one medical center for each service; and (*e*) St. Elizabeth's Hospital in the District of Columbia.

Extensive authority would be granted the secretary for hiring and training of part-time and full-time personnel. This bill is substantially the same as S. 1140 and H. R. 3688 of the 82nd Congress. Similar bills are H. R. 3305 and S. 3314 of the 82nd Congress. In April, 1951, the Committee on Legislation disapproved S. 1140 and H. R. 2305 because the bills were contrary to the action taken by the House of Delegates disapproving the transfer of veterans and military hospitals to a new central agency. In June, 1952, the legislative committee voted to support a modified bill (S. 3314) setting up a federal board of hospitalization with certain minor amendments. In December, 1952, the Board of Trustees recommended the establishment of a federal board of hospitalization. In two other bills, Mr. Hoffman suggested the creation of a new department of social security (H. R. 300) and the reorganization of the Veterans Administration in accordance with the recommendation of the Hoover Commission (H. R. 290).

Waiver of Social Security Contributions for the Disabled

This proposal, H. R. 431, by Congressman Eberharter (D., Pa.) would make effective the provision for waiver of premiums for disabled in H. R. 7800 of the last Congress. The regulations for determining disability would be left entirely to the discretion of the F. S. A. Administrator. The bill is similar to H. R. 9 by Congressman Dingle of Michigan in this Congress, previously reported. This measure was referred to the Ways and Means Committee.

Social Security Disability Insurance Benefits for Totally Disabled Persons

A measure (H. R. 383) introduced by Representative Byrd of West Virginia provides insurance benefits for persons who become totally and permanently disabled at any age at rates

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The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

equal to retirement benefits. The FSA Administrator would control the determination of disability and periodical redeterminations, including the selection of physicians and payment for examinations where nongovernment physicians are employed. This measure was referred to the Ways and Means Committee.

Tax Relief of Permanent and Totally Disabled

An additional exemption of $600 is proposed for the totally and permanently disabled taxpayer and dependent spouse in H. R. 251 by Congressman Elliott (D., Ala.). In addition to the patients with a readily observable permanent physical defect or infirmity of a person suffering from a 60% impairment of earning capacity would be eligible to the $600 exemption. Who would make the medical determinations is not specified. The measure was referred to the Ways and Means Committee.

Construction of Sixteen Thousand Additional Veterans' Administration Beds

Congressman Elliott (D., Ala.) in H. R. 28 provides for the construction of 16,000 additional Veterans' Administration beds. This bill is identical with H. R. 28 previously reported. It was referred to Veterans' Affairs Committee.

Liberalizing Presumption of Service-Connection for Tuberculosis

Congressman McDonough (R., Calif.) in H. R. 310 would authorize the presumption of service connection for all types of active tuberculosis in which a 10% degree of disability develops within three years after separation from the service. Present regulations exclude the pulmonary type. The measure was referred to the Veterans' Affairs Committee.

Outpatient Treatment for Non-Service-Connected Disabilities

Congresswoman Rogers (R., Mass.) introduced H. R. 338 to authorize outpatient treatment by the Veterans Administration for patients with 100% disability or pensions for permanent and total non-service-connected disability. At present non-service-connected cases are eligible for hospitalization if a bed is available, but not for outpatient care.

Rehabilitation

Congressman Celler (D., N. Y.) proposed H. R. 402 to extend and increase the present federal rehabilitation benefits and grants for the handicapped. Similar legislation was introduced in both Houses of the 82nd Congress. Referred to the Committee on Education and Labor.

Research in Child Life

The FSA Administrator will be authorized to spend $7,500,000 annually on research in child life, if H. R. 258 introduced by Congressman Elliott (D., Ala.) becomes public law. This would be accomplished by grants to schools and other public and nonprofit agencies and by research fellowships. A national advisory council on research in child life would be established to advise and consult with the Administrator and make recommendations for grants, training projects, and research functions. An identical measure in the 82nd Congress was introduced by the same author.

STATE MEDICAL LEGISLATION

Arkansas

Bills Introduced.—H. 33, proposes to require both **applicants for a marriage license** to present a medical certificate from a duly licensed physician, certifying that the applicant is not infected with syphilis in a communicable stage. S. 35, proposes the creation of a **State Cancer Commission.**

Georgia

Bills Introduced.—H. 59, proposes that no municipal corporation or county authority in the state, shall levy or collect any license, occupation or **professional tax** upon practitioners of law, medicine, osteopathy, chiropody, dentistry, optometry, masseur, and other specified professions. S. 30, proposes to authorize state examining boards and commissions to make use of the **injunctive process** to prevent the unlicensed practice of professions under their control. S. 35, to amend the osteopathic practice act, proposes that the **osteopathic license** shall authorize the holder to practice osteopathy which shall include the right to care for all human ailments and diseases and to use all diagnostic and therapeutic agencies and modalities including drugs, manipulations, and minor operative surgery; provided that any such license holder shall have the right to perform major operative surgery upon presentation to the board of evidence of certain specified additional training.

Idaho

Bill Introduced.—H. 42, to amend the osteopathic practice act, proposes that any person granted a certificate to practice **osteopathy** shall have the right to diagnose and treat human ailments and diseases by any means, methods, or modalities of manipulation and the use of drugs and minor operative surgery. **Minor operative surgery** is defined in the proposal as that part of surgery including procedures not involving serious hazard to life and not requiring general anesthesia.

Kansas

Bills Introduced.—H. 14 and S. 6 propose to authorize trial judges to require a **mental examination of the defendant** in any criminal case. The trial judge would have power to require such mental examination to be made by a psychiatrist employed by the state department of social welfare or by a psychiatrist employed in any state hospital or any mental hospital maintained by the county.

Maryland

Bills Introduced.—H. J. R. 3, proposes to request the **committee on medical care** to give detailed and adequate study to the question of establishing a state public health policy as to the respective financial responsibility of the State and its several counties. S. 36, to amend the narcotic drug act, proposes to include under the term **"Narcotic Drug"** any drug found by the state board of health after reasonable notice and opportunity for hearing to have habit-forming qualities and effects of habituation comparable to the specific drugs named. S. 41, proposes to add a new section to the Baltimore City Code, providing that consent for a **licensed physician to conduct a postmortem examination** of the body of a deceased person shall be deemed sufficient when given by whichever one of the following assumes custody of the body for purposes of burial; father, mother, husband, wife, child, guardian, next of kin, or in absence of any of the foregoing, a friend, or a person charged by law with the responsibility for burial. If two or more of such persons assume custody of the body, consent of one of them shall be deemed sufficient.

Minnesota

Bills Introduced.—S. 35, proposes to authorize the state board of education to award **scholarships** to any student attending an accredited school of **nursing** which provides an educational experience in a rural hospital or state hospital for the mentally ill. S. 134, proposes to authorize membership associations to be formed exclusively to establish and operate **voluntary, nonprofit plans for the medical and hospital care of groups of persons** through agreements with duly licensed physicians and surgeons, and through agreements with hospitals or by ownership thereof. Such agreements should not interfere with the manner or mode of the practice of medicine, the relationship of physician and patient, nor the responsibility of physician to patient.

Nebraska

Bills Introduced.—L. B. 68, proposes the appointment of a **State Board of Health,** of which two members shall be members of the Nebraska State Medical Society. L. B. 70, to amend the law relating to hospital licensing, proposes that such law shall also apply to **maternity homes** and homes for the aged or infirm. L. B. 83, to amend the law relating to **narcotics,** proposes among other things that the term "narcotic drugs" shall include amidone, isoamidone, and keto-bemidone.

New Jersey

Bills Introduced.—A. 129, to amend the medical practice act, proposes to permit **applicants from foreign medical schools** to apply for examination for a license to practice. A. 137, proposes that every physician shall, within twelve hours after his first attendance upon any person who is suffering from **the effect of the use of narcotic drugs** for purposes other that the treatment of sickness or injury as prescribed or administered by a person duly authorized by law to treat sick and injured human beings, to report such sickness to the Superintendent of the State Police.

North Dakota

Bills Introduced.—H. 596, to amend the chiropody practice act, proposes to define a **"doctor of surgical chiropody"** as a chiropodist who has a degree from an accredited college of chiropody. Such licentiates would be permitted to practice minor foot surgery and to administer local anesthetics. S. 88, to amend the narcotic drug act, proposes to define the term **"narcotic drugs"** so as to include amidone, isoamidone, and keto-bemidone together with other drugs found by the State Laboratories Department to have addiction-forming or addiction-sustaining liability similar to morphine or cocaine.

Wisconsin

Bills Introduced.—A. 81, proposes to authorize the state board of health to appoint an examining committee to look into the qualifications of all **public health engineers or sanitarians** entering employment of a governmental agency. S. 65, proposes the creation in the executive department of a **licensing administration department** for the purpose of centralizing the administration, record keeping, and housekeeping functions of various licensing boards and examining boards in the state including the board of basic science examiners, the board of examiners in chiropractic, and the state board of medical examiners.

MEDICAL NEWS

CALIFORNIA

Dr. Alway Goes to Colorado.—Dr. Robert H. Alway, associate professor of pediatrics at Stanford University School of Medicine since 1949, has been named professor of pediatrics at the University of Colorado, Denver, to succeed Dr. Harry H. Gordon, who is now at Sinai Hospital in Baltimore. Dr. Alway, who was formerly affiliated with the Jersey City Medical Center and the University of Minnesota Medical Center, served on the faculty of the University of Utah School of Medicine from 1943 to 1949.

State Positions Open.—Physician and Surgeon III, a classification in the California state civil service carrying an annual salary of $9,384 to $12,000, will be open for examination March 12. Applications must be filed with the state personnel board in Sacramento by Feb. 19. The physician and surgeon in this class acts as chief of service in charge of a major medical and surgical subdivision in a large state hospital, directs a staff, and has responsibility for treatment and general staff activity in a group of wards. A certificate from an American specialty board, or eligibility for examination for the certificate, is required. Positions in this class are being established in all the state mental hospitals and homes. The examination will be given at convenient points throughout California and also will be available on a nation-wide basis for out-of-state applicants. Physicians are invited to correspond with the State Personnel Board, 1015 "L" St., Sacramento, about details of the offer.

Obstetric-Gynecologic Forum.—The second annual obstetric-gynecologic forum, sponsored by the Los Angeles Obstetrical Gynecological Society, will be held at the Elks Club Feb. 14-15 for all interested licensed physicians. General practitioners will receive credit for attendance. Reservations may be made with Dr. John L. Gaspar, 6253 Hollywood Blvd., Los Angeles; fee, including luncheons, $20. The program includes the following reports:

Antibiotics in Obstetrics and Gynecology, Henry D. Brainerd, San Francisco.
Immediate Problems of the Newborn, William W. Belford, San Diego.
Blood Clotting Problems in Obstetrics and Gynecology, Arnold G. Ware, Ph.D., Los Angeles.
Management of Abortion, Ralph C. Benson, San Francisco.
Posterior Vaginal Wall Repair, Harold K. Marshall, Glendale.
Management of Third Stage of Labor, M. Edward Davis, Chicago.
Significance of Vaginal Bleeding from Infancy to Old Age, Ludwig A. Emge, San Francisco.
Complete Premature Separation of Placenta, F. Bayard Carter, Durham, N. C.
Diabetes in Pregnancy, Robert H. Williams, Seattle.
Physiopathology of Toxemia of Pregnancy (with motion pictures), Nicholas S. Assali, Cincinnati.

CONNECTICUT

Society News.—The Connecticut State Society of Anesthesiologists will meet in Bridgeport Feb. 12. Dr. C. Ronald Stephen, professor of anesthesiology, Duke University School of Medicine, Durham, N. C., will speak on "Experience with Parasympatholytic Drugs as Premedicants."

George M. Smith Book Fund.—The income of the George M. Smith Book Fund, which has been established at Yale University School of Medicine, New Haven, in honor of the late Dr. George Milton Smith, will be used to purchase books on occupational medicine and hygiene for the Yale Medical Library with an appropriate bookplate. The books will be freely available to physicians and to hospitals throughout Connecticut. Contributions, payable to Yale University for the fund, may be sent to Dr. J. Wister Meigs, 333 Cedar St., New Haven.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Outbreak of Shigellosis.—Dr. Lorenzo L. Parks, Jacksonville, reported to the U. S. Public Health Service an outbreak of shigellosis in a school in Florida, with an estimated 3,507 students infected; however, only 179 cases had actually been reported at the time of Dr. Parks' communication, and, of these, 55 had positive stool cultures for Shigella sonnei. Stool cultures of all food handlers in the establishments frequented by students revealed that a dishwasher, who also served food and waited on tables in the soda shop, was a carrier of S. sonnei.

ILLINOIS

Meeting of Neurosurgeons.—The Interurban Neurosurgical Society will meet Feb. 14 at the University Club of Chicago at 9 a. m., when the following program, which may be heard by invitation only, will be presented:

Demonstrations of Technical Procedures and Apparatus.
Surgical Treatment of Epilepsy, A. Earl Walker, Baltimore.
Surgery in Hypertensive Vascular Disease, Geza de Takats, Chicago.
Induced Hypotension in Operations on the Central Nervous System, Gordon M. Wyant, Paul C. Bucy, and Max S. Sadove, Chicago.

Physicians for Rural Areas.—The Illinois State Medical Society reports that its physician's placement service has found physicians for about 75 communities of downstate Illinois in recent years and that it has on file 100 other requests, most of them from downstate communities, and the names of 88 physicians desiring locations. The placement service, which originated during World War II, was continued to assist physicians returning from service in finding suitable locations and to help in the redistribution of physicians, who tend to establish themselves in the larger cities. Dr. Harold M. Camp, secretary of the society, points out that the society collects and distributes information to enable the right man to find the right town. The physician then conducts his own negotiations.

Chicago

Round-Table Discussions.—Under the auspices of the Cancer Coordinator's program, the University of Chicago is presenting a series of round-table discussions, open to students, faculty, residents, and the profession. The sessions are held Monday at 5 p. m. in room P-117 of Billings Hospital. On Feb. 9, polycythemia, myeloid metaplasia, and leukemia will be discussed; on Feb. 16, lymphomas; and on Feb. 23, tumors of the kidney.

Lectures on Somatopsychic Relationships.—As part of its series on somatopsychic relationships, the Chicago Medical School, 710 S. Wolcott Ave., will present the following lectures at 12:30 p. m. in Amphitheater A:

Feb. 10, Mental Reflections from the Skin, Theodore Cornbleet.
Feb. 17, Facial Deformities and Mental Health: A Sociopsychological Perspective, Mrs. Frances C. Macgregor, New York.
Feb. 24, Somatopsychic Syndromes Seen by a Neuropsychiatrist, Harry H. Garner.

Industrial Medicine Meeting.—The midwinter scientific meeting of the Chicago Society of Industrial Medicine and Surgery will be held Feb. 9, 8:15 p. m., at the Palmer House (fourth floor, room 17). "Intramedullary Fracture Fixation" will be presented by Dr. Felix Jansey, Northwestern University Medical School, and "Industrial Dermatosis" by Dr. Leonard F. Weber, University of Illinois College of Medicine. All persons of allied medical groups are invited.

Cardiac Conferences.—The cardiovascular committee of Cook County Hospital announces that regular monthly clinical and/or pathological cardiac conferences will be held on the second Friday of each month, 11 a. m. to 12 noon at the Children's Amphitheater, 700 S. Wood St. At the first conference, Feb. 13, on mitral commissurotomy Dr. Don C. Sutton will discuss clinical aspects, Dr. Egbert H. Fell, surgical aspects, and Dr. Robert F. Dillon, preoperative and postoperative cardiophysiological studies.

Ophthalmologic Conference.—The Chicago Ophthalmological Society will hold its annual clinical conference Feb. 12-14 at the Sheraton Hotel, 505 N. Michigan Ave. Thursday morning will be devoted to surgical clinics at the Illinois Eye and Ear Infirmary, Cook County, Michael Reese, Passavant Memorial, Presbyterian, and St. Luke's hospitals, and St. Francis Hospital in Evanston (registration limited; admission by ticket). At 2 p. m. motion pictures on the embryology of the eye and miscellaneous surgical subjects will be shown. On Friday morning Dr. William F. Hughes Jr. will serve as moderator for a symposium on retrolental fibroplasia, with Drs. William C. Owens, Baltimore, Milton M. Scheffler and Arlington C. Krause, Chicago, Walter R. Hepner, Galveston, Texas, and V. Everett Kinsey, Ph.D., Detroit, as collaborators. A round-table luncheon at 12:15 p. m. will be followed by presentations on diabetic retinopathy by Dr. Bernard Becker, Baltimore; myasthenia gravis by Dr. Frank B. Walsh, Baltimore; and accommodative dysharmonic esotropia by Dr. William C. Owens. On Saturday morning a symposium will be presented on local anesthesia (Dr. Daniel Snydacker, Chicago); general anesthesia (Dr. Harold L. Harris, Evanston); ocular muscles (Dr. Martin J. Urist, South Haven, Mich.); keratoplasty (Dr. William F. Hughes Jr., Chicago); retinal detachment (Dr. Peter C. Kronfeld, Chicago); glaucoma (Dr. Joseph S. Haas, Chicago); and cataract (Dr. Derrick T. Vail, Chicago). Dr. Frank W. Newell, Chicago, will be moderator. That afternoon Dr. Haas will be moderator in a symposium on the aqueous humor, with Drs. Georgiana M. D. Theobald, Oak Park, Ill., V. Everett Kinsey, and Bernard Becker as collaborators. A reception at 6 p. m. Saturday will precede dinner, after which the annual Sanford Robinson Gifford memorial lecture will be delivered at 8:30 p. m. by Dr. Frank B. Walsh, associate professor of ophthalmology, Johns Hopkins University, Baltimore, on "Some Aspects of Calcification in Ophthalmology." Dinner reservations may be made through Miss Maud Fairbairn, 8 W. Oak St., Chicago 10.

INDIANA

Heart Seminar.—The Indiana Heart Foundation and the Indiana University School of Medicine will sponsor a postgraduate heart seminar in the afternoon and evening of Feb. 10 at the Indiana University Medical Center, Indianapolis. Speakers will include Gen. George E. Armstrong, Surgeon General of the U. S. Army, Washington, D. C.; Dr. Walter T. Zimdahl, instructor, University of Buffalo School of Medicine, Buffalo; and Dr. Paul Dudley White, Boston.

MARYLAND

Fluoridation of Baltimore Water Supply.—At recent ceremonies, the fluoridation of Baltimore's water supply was initiated. It is estimated that the water bureau serves 970,000 Baltimoreans and 210,000 persons in Anne Arundel, Howard, and Baltimore counties.

Festschrift Honors Dr. Park.—The December, 1952, issue of the *Journal of Pediatrics* was a *Festschrift* in honor of Dr. Edwards A. Park, Baltimore, on his 75th birthday. Dr. Park served for years on the editorial board of the journal, in which he developed the section "The Social Aspects of Medicine." Dr. Park, emeritus professor of pediatrics at Johns Hopkins University School of Medicine, Baltimore, has been affiliated with Columbia University College of Physicians and Surgeons, New York, and Yale University School of Medicine, New Haven, Conn., where he was Sterling professor of pediatrics. He is a Chevalier of the Order of Leopold and an honorary member of the British, French, and Hungarian pediatric societies.

MASSACHUSETTS

Program of Pulmonary Disease.—On Feb. 18 (2-5 p. m.) as part of its 15 hour Postgraduate Medical Institute course in general medicine, the Massachusetts Medical Society will present the following lectures in the Doctors' Library, Burbank Hospital, Fitchburg:

Therapy of Bronchospastic Disease, Maurice S. Segal, Boston.
Newer Concepts in Pulmonary Functions, Edward A. Gaensler, Boston.

Dr. Joslin Honored.—The newly renovated Public Health Service Diabetes Study Center, located in Oxford Town Hall, was recently rededicated in honor of Dr. Elliott P. Joslin, Boston. Dr. Joslin was further honored by an award from the local American Legion Post, which presented the Legion medal for Americanism to him for "his help in establishing the Clara Barton Diabetic Camp for Girls nearby and a similar camp for boys in Charlton, Massachusetts, which bears his name." Dr. Hugh L. C. Wilkerson, Boston, chief of the Diabetes Section of the Public Health Service, paid tribute to Dr. Joslin "for an unselfish lifelong career, dedicated to the capture and arrest of dreaded diabetes." After the ceremonies in Town Hall, Dr. and Mrs. Joslin held a reception at their home in celebration of their golden wedding anniversary.

MICHIGAN

Lectures for Laymen.—In cooperation with the adult education department of the Jackson Public Schools, the Jackson County Medical Society is presenting as a public health service a health education series. On Feb. 11 five members of the Jackson County Medical Society will discuss "Child Growth and Development." On April 15 and May 13, the subject for discussion will be "Common Diseases of the Most Productive Years of Life."

Hospital Opens Maternity Home.—An experiment that began in a three room flat in 1897 recently culminated in the dedication of the $450,000 Florence Crittenton Maternity Home on Woodrow Wilson at Tuxedo in Detroit. The new unit, a separate building adjacent to the hospital, is exclusively for expectant mothers in their last weeks of pregnancy. While living in the maternity residence, they will receive prenatal and obstetric care at the hospital. Funds for erection of the building were granted by the Greater Detroit Hospital Fund, which also provided an additional $120,000 to remodel the hospital building. The project was underwritten by the United Community Service, but each resident is expected to pay all or part of her expense, though none will be rejected because of lack of funds. The new building has 64 beds.

MISSISSIPPI

Four Deaths from Rabies.—Dr. Archie L. Gray, state board of health, Jackson, reports rabies virus isolated from the brain of a 6-year-old girl, who lived in the west central part of the state. Four unvaccinated dogs in the neighborhood died within a week, with symptoms suggestive of rabies. The onset of the child's illness was estimated to be one month after the last dog died. A total of four confirmed rabies deaths, all in children, has been reported in the state since July.

MISSOURI

Public Meeting on Overweight.—On Feb. 12 at 8 p. m. the St. Louis Medical Society will present in its auditorium (3839 Lindell Blvd.) the St. Louis Medical Forum, a public meeting, on "Overweight and High Blood Pressure."

Society News.—Dr. Albert Kuntz, professor of anatomy, St. Louis University School of Medicine, will address the Charlton-Macon-Monroe-Randolph Counties Medical Society, Feb. 12, on "The Autonomic Nervous System in Health and Disease."

Voice of America.—A report on "The Clinical Value of Anticancer Drugs" by Dr. Goronwy O. Broun, professor of internal medicine, St. Louis University School of Medicine, before the American Association for the Advancement of Science, has been selected by the U. S. State Department for broadcasting "Radio University" over the Voice of America.

Bequest to University.—The St. Louis University School of Medicine will receive $101,380 under the will of Dr. William Washington Graves, director of the department of neuropsychiatry for 23 years, who died in April, 1949. The bequest was specifically designated by Dr. Graves for a special collection of 1,000 human skeletons. The school of medicine is also to receive 800 pairs of human collarbones. Dr. Graves also willed most of his collection of books, papers, reprints, and correspondence on human anatomy to the medical school.

NEW JERSEY

Dr. Simonton Honored.—A portrait of Dr. Thomas Grier Simonton, now of Ventnor, a past president of the Medical Society of the State of Pennsylvania and former resident of Pittsburgh, was recently hung during Alumni Day at the University of Pittsburgh School of Medicine, where he taught as assistant professor of medicine (1910-1929) and as associate professor (1929-1946), and on retirement became an emeritus member of the faculty.

Pediatrics for General Practitioners.—As part of its postgraduate course in pediatrics for general practitioners, on March 25 St. Michael's Hospital, Newark, will present a talk on "Disorders of the Newborn and Infancy" by Dr. Samuel Karelitz, assistant clinical professor of pediatrics, Columbia University College of Physicians and Surgeons, New York. This course is open to all physicians in the state. There will be a registration fee of $25 for the five lectures. Application should be made before March 1 to Dr. Harrold A. Murray, St. Michael's Hospital, Newark.

NEW YORK

Human Anthrax.—Dr. James J. Quinlivan, district health officer, New York State Department of Health, reported to the U. S. Public Health Service a fatal case of anthrax in a weaver at a carpet mill. Bloody spinal fluid, drawn the day after the patient became ill, revealed the presence of Anthrax bacilli.

Short Laboratory Course.—The University of Buffalo School of Medicine will conduct a postgraduate course in "The Laboratory in Clinical Diagnosis" Feb. 12-19 in the lecture hall of the school, 24 High St. Physicians participating in presentation of the course, which will be approved for credit by the New York State Chapter of the American Academy of General Practice, include Drs. Marvin L. Bloom, Philip L. Calcagno, Ivan L. Bunnell, Alfred R. Lenzner, and William H. C. Chapple. Registration may be made through the office of Dr. Milton Terris, assistant dean for postgraduate education of the medical school.

New York City

Tumor Conference.—At the Tumor Clinic Conference to be held in the Women's Pavilion of Harlem Hospital Feb. 18, 10:45 a. m., Dr. Sidney Farber, director of research, Children's Cancer Research Foundation, Boston, will speak on "Lipid Metabolic Disorders."

Conference on Nutritional Factors and Liver Diseases.—This conference will be held in the Barbizon-Plaza Hotel, 101 W. 58th St. at 6th Ave., Feb. 13-14 under the auspices of the Section of Biology, New York Academy of Sciences. The Friday program will be devoted to discussions on fatty liver and cirrhosis, and the Saturday sessions to liver necrosis. There will be a dinner at the academy building (2 E. 63rd St.) at 6 p. m. Friday.

Meeting on Congestive Heart Failure.—The New York Society for Circulatory Diseases will meet at 8:30 p. m. Feb. 10 at the New York Academy of Medicine to hear an evaluation of the newer concepts of the pathogenesis and treatment of congestive heart failure. Among the speakers will be Dr. Raymond E. Weston, head of the Cardiovascular and Metabolic Research Service, Montefiore Hospital, and his research associate Dr. Jacob Grossman.

Academy Honors Dr. Corwin.—The Public Health Relations Committee of the New York Academy of Medicine recently gave a dinner in honor of Edward H. L. Corwin, Ph.D., who is retiring as the committee's executive secretary after 41 years of service. Dr. Corwin has accepted appointment as consultant to the Committee on Public Health, Medical Society of the County of New York. Addresses were given by Dr. Gervais W. McAuliffe, president of the society, and Dr. George Baehr, chairman, Committee on Public Health Relations. Dr. Harry S. Mustard, former city health commissioner, was toastmaster. A portrait of Dr. Corwin was accepted by Dr. William B. Parsons, president, for the academy. To Dr. Corwin, who is associate professor of health practice at Columbia University, are attributed many improvements in health conditions in New York City.

OHIO

Auscultation of the Heart.—At a combined meeting of the Central Ohio Heart Association and the staff of University Hospital, Columbus, at the hospital Feb. 9 at 7:30 p. m., Dr. Franklin D. Johnston, University of Michigan Medical School, Ann Arbor, will speak on "Auscultation of the Heart." Dr. Johnston will conduct a clinic at 11 a. m. the same day.

Benjamin Rachford Lectures.—Dr. Paul Gyorgy, professor of nutrition in pediatrics, University of Pennsylvania School of Medicine, Philadelphia, will deliver the 21st annual series of the Benjamin Knox Rachford lectures on Feb. 10-11 at 8:30 p. m. at the Children's Hospital Clinic and Research Building, Cincinnati. The titles of his lectures are "Human Milk Versus Cow's Milk in Infant Nutrition" and "Protein Nutrition and the Liver."

PENNSYLVANIA

Hahnemann-Packer Affiliation.—The Hahnemann Medical College and Hospital of Philadelphia announces completion of a teaching affiliation with the Guthrie Clinic, Robert Packer Hospital at Sayre. Beginning with the academic year 1953-1954, groups of fourth year students will receive four weeks' instruction in medicine, surgery, and pediatrics as clinical clerks in the hospital and outpatient services of the clinic. During the period of each service, students will reside within the hospital area and be on call 24 hours daily. Members of the clinic who carry the major portion of the teaching load will receive affiliate faculty titles from Hahnemann. Dr. William C. Beck of the senior surgical staff of the clinic will be director of the teaching program.

Philadelphia

Institute Celebrates Golden Anniversary.—The Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis, University of Pennsylvania, recently celebrated its 50th anniversary. Dr. Frank A. Craig, associate director of the institute and professor emeritus of clinical medicine, a member of the institute's original staff, served as chairman of the program. Dr. J. Burns Amberson, professor of medicine, Columbia University of Physicians and Surgeons, New York, spoke on "The Treatment of Tuberculosis" and Dr. Thomas Parran, dean, Graduate School of Public Health, University of Pittsburgh, on "The Prevention of Tuberculosis."

TEXAS

Medicolegal Course.—Under the direction of Dr. Hubert Winston Smith, professor of legal medicine, University of Texas Medical Branch, Galveston, and director of the Law-Science Institute, University of Texas, Austin, a course on legal medicine will be held in Houston at the Shamrock Hotel, Feb. 9-12. Speakers will include members of the staff of the University of Texas and of Baylor University College of Medicine, Houston.

Telephone Broadcasts.—The first in the series of four telephone broadcasts to be held during 1953 under the sponsorship of the Council on Medical Education and Hospitals of the Texas Medical Association is scheduled for Feb. 17, when "Peptic Ulcer—Modern Concepts" will be presented, with Dr. Tate Miller, Dallas, as moderator. Other programs in the series are the following:

March 10, Poliomyelitis—Evaluation of Present Status, Dr. James M. Coleman, Austin, moderator.
Oct. 13, Practical Management of More Frequent Obstetric Emergencies, Dr. William F. Mengert, Dallas, moderator.
Nov. 10, Use and Abuse of Antibiotics, Dr. James E. Kreisle, Austin, moderator.

WEST VIRGINIA

Society News.—The Cabell County Medical Society, which will hold a dinner meeting at the Georgian Terrace Room of the Fredrick Hotel, Huntington, Feb. 12, will have as its principal speaker, Dr. Howard D. J. Fabing of Cincinnati, who will discuss "Indications for Shock Treatment" and present a 20 minute sound movie on "Treatment of Mania."

GENERAL

University Surgeons Meet in St. Louis.—The annual meeting of the Society of University Surgeons will be held in St. Louis Feb. 12-14, with the Washington University School of Medicine as host. On Thursday, the surgery department at St. Louis University will cooperate in presenting a program at the school. Friday and Saturday, papers will be read by members of the society at the Park Plaza Hotel. Dr. Eugene M. Bricker, associate professor of clinical surgery, Washington University, is president of the society. Dr. Franklin E. Walton, assistant professor of clinical surgery and former president of the society, will serve as public relations and publicity coordinator.

Hospital Association Meetings.—The annual convention of the American Protestant Hospital Association will be held at the Palmer House, Chicago, Feb. 12-13. On Friday afternoon Dr. Edwin L. Crosby, executive director, Joint Commission on Hospital Accreditation, Chicago, will give a "Report of Progress of Program of Accreditation of Hospitals."——At the convention of the National Association of Methodist Hospitals and Homes, at the Palmer House, Chicago, Feb. 11-12, Dr. Dean W. Roberts, director, Commission on Chronic Illness, Baltimore, will deliver a luncheon address Wednesday on "Next Steps in Meeting the Problem of Chronic Illness."

Paraplegia Foundation Fellowships.—The National Paraplegia Foundation (Broad-Grace Arcade, Richmond 19, Va.) announces continuation of a limited number of fellowships for research in spinal cord disease and trauma and in the complications commonly associated with such disease or injury. These fellowships, which carry a minimum annual stipend of $3,000, may be awarded to any candidate who has demonstrated a capacity for medical research and has outlined a program of meritorious study. Application forms for the award for the academic year 1953-1954 may be obtained from Dr. Leslie W. Freeman, chairman of the Medical Advisory Committee. Applications should be submitted to him before May 1.

Award to Paul D. White.—The Albert and Mary Lasker Foundation and the American Heart Association, in announcing establishment of the annual Albert Lasker award for distinguished achievement in the field of cardiovascular diseases, recently named Dr. Paul Dudley White, clinical professor of medicine, Harvard Medical School, Boston, as first winner of the award. Dr. White was a founder of the association in 1922 and served as its president in 1940-1941. The award, a prize of $1,000, a scroll describing his accomplishments, and a gold statuette of the Winged Victory of Samothrace, was presented at the 1953 Heart Fund Dinner of the Massachusetts Heart Association in Boston. Dr. White last year received the American Medical Association's Distinguished Service Award.

Tropical Disease Research Center.—Dr. Max J. Miller, associate professor in the Institute of Parasitology of Macdonald College, McGill University, has been named research director of the Liberian Institute of the American Foundation for Tropical Medicine, in Harbel, West Africa. The institute's immediate objective is to provide a specialized laboratory center in which scientists can unite in a common drive to conquer tropical diseases. Facilities will be made available to visiting scientists and graduate medical students, without restriction to nationality, to carry on independent research in the fields of health and nutrition in the tropics. Liberia is said to offer an excellent vantage point for a research center in tropical diseases. The country has long been an endemic center for malaria, sleeping sickness, filariasis, elephantiasis, schistosomiasis, and many other parasitic diseases, for yaws and other spirochete diseases, for numerous dysenteries, some of which are not yet classified, and for many virus diseases.

Eastern Regional Meeting of Surgeons.—The International College of Surgeons will hold an eastern regional meeting at the Bellevue Stratford Hotel, Philadelphia, Feb. 13-14. The sessions will open with a motion picture on "Surgical Treatment of Varicose Veins" by Dr. Henry N. Harkins, Seattle, followed by papers on medical and surgical management of occlusive arterial lesions and on corticotropin (ACTH) and cortisone in surgery. In the afternoon there will be a panel discussion on "Hypersplenism—Its Surgical Implications." Dr. Joseph S. Lawrence, former director, Washington Office, American Medical Association, will be guest speaker at the banquet at 7 p. m. The Saturday session will open with a motion picture on "Splenectomy for Hypersplenism" by Dr. C. Stuart Welch, Boston, followed by a panel discussion and a symposium on thoracic surgery. At 2 p. m. there will be a panel discussion on anesthesiology, and at 3 p. m. a panel on the colon. The orthopedic and ophthalmology-otorhinolaryngology meetings will be held on Friday, with a symposium on deafness at 3:45 p. m. during the latter meeting. The genitourinary and the obstetric and gynecology meetings will be held on Saturday.

Influenza Outbreaks.—In its communicable disease survey for the week ended Jan. 17, the U. S. Public Health Service notes, among others, the following reports of influenza outbreaks: at the State University of New York, Syracuse, a report of an outbreak of clinical influenza with 35 cases in three days; and at the University of Chicago, a sudden increase in prevalence of acute respiratory illness among students and faculty members. Dr. Roland R. Cross, Springfield, Ill., state director of public health, reports an influenza-like disease in a community in Carroll County, affecting an estimated 25% of the population during the last half of December. The Division of Preventive Medicine, U. S. Navy Bureau of Medicine and Surgery, reports an increased incidence of respiratory disease in Naval establishments in Florida, Tennessee, Oklahoma, Kansas, and California. The Preventive Medicine Division, U. S. Air Force, reports that influenza has been identified by serologic tests recently in Air Force bases in Colorado, Texas, New Mexico, Wyoming, South Dakota, Iowa, Kansas, Kentucky, and New Jersey. The medical director, Tennessee Public Health Service, reports respiratory disease outbreaks in Memphis and Jackson, and the New Mexico Department of Public Health has sent notification of an outbreak of respiratory disease in Santa Fe. There have been outbreaks of influenza-like disease in 11 counties in Arkansas. Nearly a hundred cases of influenza have been reported in an Indian school in Todd County, South Dakota. From South Carolina come reports of an unusual number of cases of an influenza-like disease, especially in Columbia, Greenwood, and Bishopville. Influenza-like disease had been prevalent in Utah for the preceding two or three weeks. Most of the 1,500 cases reported had been in Salt Lake County, but 11 of the 29 counties had reported cases. The epidemic has generally been mild. Confirmation of diagnosis of A′ influenza was made in persons in 12 central states and 4 along the eastern seaboard.

CANADA

Charles H. Best Institute.—The cornerstone was recently laid for the Charles H. Best Institute at College St. and Queens Park, Toronto. The building, when completed, will be devoted to teaching and research in physiology at the University of Toronto.

FOREIGN

Congress of Oto-Neuro-Ophthalmology.—The International Congress of Oto-Neuro-Ophthalmology, which will be held in Bologna, Italy, May 3-7, will consider as its main topics (1) dysraphia in oto-neuro-ophthalmology and (2) Ménière's disease. Information may be obtained from the General Secretary, Dr. Giuseppe Cristini, Clinica Oculistica-Policlinico, Bologna, Italy.

Offer Bodies for Autopsy.—The inaugural meeting of the Yokokai Association was recently held at the Medical Association Hall in Nagasaki. This group dedicates its corpses for autopsy for the promotion of medicine and human welfare. It now has 24 members, and its president is Dr. Takeharu Morokuma. The association will promote a nationwide movement for the formation of similar organizations. The regulations of the Yokokai Association read: "The members of this association shall offer their bodies for autopsy after death with the approval of the bereaved family. Autopsy shall be performed by competent doctors of the School of Medicine, Nagasaki University, or of ABCC, Nagasaki. All of the autopsy findings shall be kept in absolute secrecy to those other than the bereaved family and doctors concerned."

Intensified Rat Control Efforts Urged.—At a recent meeting in Bombay, India, the World Health Organization's Expert Committee on Plague agreed that deaths from plague could be avoided in the present state of medical knowledge and that adequate dosages of certain antibiotics could consistently reduce deaths to below 10% of cases even in the pneumonic and septicemic varieties of plague. The committee agreed that, in uncomplicated cases of bubonic plague, sulfonamides used alone had given satisfactory results but emphasized that the most effective and valuable method of preventing plague outbreaks was by improvement of houses so that rats could no longer live in close contact with man. Other modern weapons of plague prevention were reviewed, including vaccination, use of chlorophenothane (DDT) against rat fleas, and certain basically new rat poisons. Use of insecticides on the largest possible scale was recommended, particularly for checking the outbreak of epidemics and, in nonepidemic periods, wholesale destruction of rats as an important additional measure of protection. Because they were considered harmless to human beings and domestic animals if properly administered, anticoagulant poisons were recognized as superior. The new poisons, which kill rats slowly without causing "bait-shyness," are able gradually to wipe out whole rat populations. The committee concluded that plague vaccines were satisfactory in protecting human beings, provided correct doses were given and inoculations repeated at suitable intervals depending on the particular vaccine used. The importance of standardizing certain laboratory procedures involved in research on the plague bacillus was emphasized, and it was recommended that key laboratories be named to serve plague areas lacking proper laboratory facilities.

CORRECTION

Hair on the Legs.—In the answer to the query with this title in THE JOURNAL, Jan. 10, 1953, page 166, after the sentence "A proprietary preparation, superoxol,® also is used" it should have been stated that superoxol® should be diluted one part to 10 or 20 parts of water.

The Adrenal Gland in Tropical Sprue.—In the article by the foregoing title, in THE JOURNAL, Oct. 18, 1952, page 649, left-hand column, 13 lines from the bottom, the sentence should read as follows: "Eleven patients had plasma chloride ion values that were below [instead of above] the normal level."

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Annual Session, New York, June 1-5.

1953 Clinical Session, St. Louis, Dec. 1-4.

1954 Annual Session, San Francisco, June 21-25.

1954 Clinical Session, Miami, Florida, Nov. 30-Dec. 3.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Roanoke Hotel, Roanoke, Va., Feb. 27-28. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Statler Hotel, Boston, Feb. 26-28. Dr. Ben Z. Rappaport, 55 East Washington St., Chicago, Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 26-28. Prof. Ralph F. Turner, Michigan State College, Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF GENERAL PRACTICE. Kiel Auditorium, St. Louis, March 23-26. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

AMERICAN ASSOCIATION OF ANATOMISTS, Columbus, Ohio, April 1-3. Dr. Normand L. Hoerr, 2109 Adelbert Road, Cleveland 6, Secretary.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, St. Louis, April 2-4. Dr. Alan R. Moritz, 2085 Adelbert Road, Cleveland 6, Secretary.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Fairmont Hotel, San Francisco, March 27-30. Dr. Paul C. Samson, 2938 McClure St., Oakland 9, Calif., Secretary.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Statler, Cleveland, Feb. 23-25. Dr. Exie E. Welsch, 303 Lexington Ave., New York 16, Secretary.

AMERICAN PROTESTANT HOSPITAL ASSOCIATION, Palmer House, Chicago, Feb. 10-13. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

AMERICAN SURGICAL ASSOCIATION, Hotel Statler, Los Angeles, April 1-3. Dr. Nathan A. Womack, Dept. of Surgery, School of Medicine, Univ. of N. C., Chapel Hill, N. C., Secretary.

ATLANTA GRADUATE MEDICAL ASSEMBLY, Atlanta-Biltmore Hotel, Atlanta, Ga., Feb. 23-25. Dr. Mark S. Dougherty, 15 Peachtree St. N.W., Atlanta, Ga., Chairman.

CENTRAL SURGICAL ASSOCIATION, Drake Hotel, Chicago, March 5-7 Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 3-6. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago 1, Secretary.

DALLAS SOUTHERN CLINICAL SOCIETY, Baker and Adolphus Hotels, Dallas, Texas, Mar. 16-19. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Secretary.

MICHIGAN CLINICAL INSTITUTE, Sheraton Hotel, Detroit, March 11-13. Dr. J. M. Robb, 606 Townsend St., Lansing 15, Mich., General Chairman.

NATIONAL MULTIPLE SCLEROSIS SOCIETY, New York, March 10. Miss Sylvia Lawry, 270 Park Ave., New York 17, Executive Secretary.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, Hotel Statler, New York, March 18-20. Dr. Franklin M. Foote, 1790 Broadway, New York 19, Executive Director.

NEW ENGLAND SOCIETY OF ANESTHESIOLOGISTS, Boston, April 3. Dr. Francis J. Audin, 114 Danehill Rd., Newton Highlands 61, Mass., Secretary.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, March 2-5. Dr. Woodward D. Beacham, 1430 Tulane Avenue, New Orleans 12, Secretary.

PACIFIC COAST SURGICAL ASSOCIATION, Seattle and Harrison, Hot Springs, B. C., Feb. 16-20. Dr. Carleton Mathewson Jr., Stanford University Hospital, San Francisco, Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

COLORADO, Denver, February 17, Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

DELAWARE, Wilmington, Feb. 27. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

KANSAS, Kansas City, March 20. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

VIRGINIA, Veterans Administration Hospital, Hampton, Feb. 26. Dr. John B. McKee, 114 West Boscawen St., Winchester, Chairman.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

ATLANTA, GA., The Atlanta Biltmore, Feb. 23-24. Dr. William G. Hamm, 384 Peachtree St. N.E., Atlanta, Chairman.

BOSTON, Statler Hotel, March 2-5. Dr. Samuel F. Marshall, 605 Commonwealth Ave., Boston, Chairman.

SALT LAKE CITY, Utah Hotel, Mar. 20-21. Dr. John H. Clark, 349 East First Street South, Salt Lake City, Chairman.

OKLAHOMA CITY, Oklahoma-Biltmore Hotel, March 24-25. Dr. C. E. Clymer, 117 North Broadway, Oklahoma City, Chairman.

LOS ANGELES, Statler Hotel, March 30-31. Dr. Ewing L. Turner, 1930 Wilshire Blvd., Los Angeles, Chairman.

SIOUX VALLEY MEDICAL ASSOCIATION, Sioux City, Iowa, Feb. 24-26. Dr. Edward H. Sibley, 622 Fourth St., Sioux City 9, Secretary.

SOCIETY OF NEUROLOGICAL SURGEONS, Roosevelt Hotel, New Orleans, March 19-21. Dr. Edgar F. Fincher, Emory University, Ga., Secretary.

SOCIETY OF UNIVERSITY SURGEONS, Washington University, St. Louis, Feb. 12-14. Dr. Clarence Dennis, Kings County Hospital, Brooklyn, N. Y., Secretary.

SOUTHEASTERN ALLERGY ASSOCIATION, Havana, Cuba, March 26-29. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 49, S. C., Secretary.

SOUTHEASTERN SURGICAL CONGRESS, Louisville, Ky., March 9-12. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, SURGICAL DIVISION MEETINGS:

PENNSYLVANIA AND SURROUNDING STATES, Bellevue-Stratford Hotel, Philadelphia, Feb. 13-14. Dr. Moses Behrend, 225 South 17th St., Philadelphia, Chairman.

ST. LOUIS, Statler Hotel, March 31-April 2. Dr. Roland Klemme, 4952 Maryland Ave., St. Louis 8, Chairman.

UNITED STATES-MEXICO BORDER PUBLIC HEALTH ASSOCIATION, El Paso, Texas, March 26-27. Dr. J. Ellington, 314 U. S. Court House, El Paso, Texas, Secretary.

FOREIGN

BRITISH MEDICAL ASSOCIATION, Cardiff, S. Wales, July 13-17. Dr. A. MacCrae, B. M. A. House, Tavistock Square, London W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Winnipeg, Manitoba, Canada, June 15-19. Dr. T. C. Routley, 135 St. Clair Avenue W., Toronto 5, Ontario, Canada, General Secretary.

CONGRESS OF INTERNATIONAL LEAGUE AGAINST RHEUMATISM, Geneva and Zurich, Switzerland, Aug. 24-29. For information write: Dr. W. Tegner, The London Hospital, London E.1, England.

CONGRESS OF THE INTERNATIONAL SOCIETY OF ANGIOLOGY, Lisbon, Portugal, Sept. 18-20. Dr. Henry Haimovici, 105 East 90th St., New York 28, N. Y., U. S. A., Secretary.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 14-20. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS OF ALLERGOLOGY, Stockholm, Sweden, May 20-23. For information write: Dr. Egon Brunn, Gersonavej 8, Hellerup, Copenhagen, Denmark.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Paulista Medical Association Bldg., Sao Paulo, Brazil, Feb. 9-12. Dr. Moacyr Eyck Alvaro, 1151 Conselacao, Sao Paulo, Brazil, Chairman.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF AUDIOLOGY, Groningen, Netherlands, June 5-6. Dr. Gunnar Holmgren, Strandvagen 5A, Stockholm, Sweden, President.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF GYNECOLOGY, Geneva, Switzerland, July 21-26. Dr. Maurice Fabre, 1, rue Jules-Lefebore, Paris IXe, France, General Secretary.

INTERNATIONAL CONGRESS OF HIPPOCRATIC MEDICINE, Evian, France, Sept. 3-6. Prof. P. Delore, 13 rue Jarente, Lyons, France, Secretary-General.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U.S.A., Secretary-General

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept. 6-12. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF OTO-NEURO-OPHTHALMOLOGY, Bologna, Italy, May 3-7. Dr. Guiseppe Cristini, Clinica Oculistica, Policlinico, Bologna, Italy, General Secretary.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-15. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

INTERNATIONAL CONGRESS OF RADIO-BIOLOGY, Copenhagen, Denmark, July 14-25. Prof. Flemming Norgaard, Oster Voldgade 10, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF THALASSOTHERAPY, Dubrovnick, Yugoslavia, May 17-25. Prof. C. Plavaic, Mavrodne Republick 51, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESSES OF TROPICAL MEDICINE AND MALARIA, Istanbul, Turkey, Aug. 28-Sept. 4. Professor Dr. Ihsan Sükrü Aksel, Tunel Meydam, Beyoglu, Istanbul, Turkey, General Secretary.

INTERNATIONAL FERTILITY ASSOCIATION, Henry Hudson Hotel, New York, N. Y., U. S. A., May 25-31. Dr. Abner I. Weisman, 1160 Fifth Avenue, New York 29, N. Y., U. S. A., Associate Secretary General.

INTERNATIONAL GYNAECOLOGICAL MEETING, Paris, France, May 22-23. For information write: Dr. Jacques Courtois, 1, rue Racine, St. Germain-en-Laye, Seine et Oise, France.

INTERNATIONAL HOSPITAL CONGRESS, London, England, May 25-30. Capt. J. E. Stone, 10 Old Jewry, London, EC2, England, Hon. Secretary.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Montreal, Canada, Aug. 31-Sept. 4. Dr. A. S. V. Burgen, Dept. of Physiology, McGill University, Montreal, Canada, Secretary.

INTERNATIONAL PSYCHO-ANALYTICAL CONGRESS, Bedford College, Regent's Park, London N.W.1, England, July 26-30. Dr. Ruth S. Eissler, 285 Central Park West, New York 24, N. Y., Hon. Secretary.

INTERNATIONAL VETERINARY CONGRESS, Stockholm, Sweden, Aug. 9-15. Prof. Axel Isaksson, Institute of Veterinary Medicine, Stockholm 50, Sweden, Secretary.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

PHILIPPINE MEDICAL ASSOCIATION, Manila, April 19-26. Dr. Manuel D. Penas, Doctor's Hospital, 707 Vermont St., Manila, Philippines, Secretary.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 24-29. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C.1, England, Secretary.

WORLD MEDICAL ASSOCIATION, The Hague, Amsterdam, Holland, Aug. 31-Sept. 7. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* All centers where there are five or more candidates. Feb. 9-11, April 20-21 (Part II only), June 22-24 and Sept. 8-10 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination they wish to take. Final date for filing application for the February examination was December 29. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 17. Final date for filing applications is January 17. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various Centers, Sept. 3. *Oral.* Philadelphia, Oct. 16-18. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New Orleans, Feb. 3-6; Boston, April 9-11; New York City, May. The closing date for acceptance of applications for oral examinations in New Orleans, Boston and New York City was January 2 except for candidates in military or Naval Service. *Oral.* San Francisco, Sept. 21-23; Chicago, Nov. 30-Dec. 2. The closing date for acceptance of applications for the San Francisco and Chicago oral examination is April 1. *Oral Examiners in the Subspecialties.* Allergy, New York City, June. Cardiovascular Disease, Philadelphia, April 7 and New York City, May 27. Gastroenterology, Philadelphia, April 10-11. Pulmonary Disease, Boston, April 8 or 9 and Los Angeles, May. The closing date for acceptance of applications is February 1. *Written.* October 19. The closing date for acceptance of applications is May 1. Exec. Sec.-Treas., Dr. William A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June 1953. Final date for filing application for the oral examination was Jan. 15, 1953. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Various Centers, Feb. 6, 1953. Final date for filing applications was Nov. 1. *Oral and Pathological, Part II.* Chicago, May 17-24, Final date for filing application is Feb. 1. Sec., Dr. R. L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1953. Final date for filing applications was July 1. *Practical.* New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New Orleans, April 21-25, 1953. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Written and Practical Examination in Pathologic Anatomy and Clinical Pathology.* The examination will include exfoliative cytology. St. Louis, March 28-31. Sec., Dr. Wm. B. Wartman, 303 E. Chicago Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Baltimore, Feb. 20-22; Memphis, March 27-29; Philadelphia, May 1-3; Detroit or Ann Arbor, June; Place undecided, Oct. 9-11 (tentative); Indianapolis, November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Oral and Written.* May 30-31. Final date for filing applications is March 31. *Sec.*, Dr. Robert L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Final date for receipt of case reports for the spring examination (May-June) is January 1 of each year. Final date for receipt of case reports for the fall examination (October-November) is June 1 of each year.

AMERICAN BOARD OF PREVENTIVE MEDICINE: April 23-25, Berkeley, Boston, Baltimore, Minneapolis and New Orleans. New York City, Nov. 7-9. Sec., Dr. Ernest L. Stebbins, 615 North Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* For candidates in proctology and ano-rectal surgery. May 9, Kansas City, Minneapolis, Philadelphia and San Francisco. The examination will be in anatomy, physiology, biochemistry and pathology and will be both oral and written. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, April 30-May 1. Sec.-Treas., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Tampa, April 8-15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1953, Final date for filing application was Dec. 1. Sec., Dr. John B. Flick, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, Feb. 7-11. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16, Minn.

BOARD OF THORACIC SURGERY: *Written.* Various Centers, Feb. 27. Final date for filing applications was Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Wilson, Edward Harlan ⊕ Columbus, Ohio; born in Columbus, Ohio, May 31, 1891; Harvard Medical School, Boston, 1920; professor of orthopedic surgery and head of the department, Ohio State University College of Medicine; specialist certified by the American Board of Orthopaedic Surgery; member of the American Orthopaedic Association, Clinical Orthopaedic Society, Columbus Surgical Society, and the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; director and head of the department of orthopedic surgery, Ohio State University Hospital, Children's Hospital, and Mount Carmel Hospital; in 1942 resident director, American Hospital in Britain, Oxford, England; honorary fellow, Exeter College, Oxford, England; director, Midland Mutual Life Insurance Company; died Dec. 14, aged 61, of a heart attack.

Ward, Mark Hopkins ⊕ Boston; born in Newton Centre, Mass., in 1884; Columbia University College of Physicians and Surgeons, New York, 1911; an Affiliate Fellow of the American Medical Association; for many years a medical missionary and medical secretary of the American Board of Commissioners for Foreign Missions; went to Turkey in 1915 as an American Board medical missionary and as an American Red Cross physician, serving until 1917; enlisted in the medical corps of the U. S. Army, serving with the rank of captain in France and participating in the Chateau Thierry, St. Mihiel, and Argonne Forest campaigns; from 1919 to 1923 was with the Near East Relief in Turkey; died in Newton Highlands suddenly Dec. 22, aged 68, of cerebral hemorrhage.

Woods, Emile Bryant ⊕ Atlanta, Ga.; St. Louis University School of Medicine, 1927; member of the Oklahoma State Medical Association; formerly on the faculty of the University of Georgia School of Medicine, Augusta, State University of Iowa College of Medicine, Iowa City, and University of Buffalo (N. Y.) School of Medicine; at one time affiliated with the Municipal Hospital in Tampa, Fla.; served as industrial assistant in the South Dakota State Health Department and director of the maternal and child health division of the state board of health of Florida in Jacksonville; consultant in obstetrics, division of maternal and child health, state health department; died in St. Joseph's Infirmary Nov. 7, aged 52, of respiratory paralysis.

Lehnhoff, Henry John ⊕ Lincoln, Neb.; born Dec. 10, 1871; Northwestern University Medical School, Chicago, 1901; past president of the Federation of State Medical Boards of the United States, Lancaster County Medical Society, Nebraska State Medical Association, and the Missouri Valley Medical Society; formerly secretary of the state board of examiners in medicine; from 1911 to 1939 served on the city library board; affiliated with Bryan Memorial Hospital, Lincoln General Hospital, and St. Elizabeth's Hospital, where he served as chief of staff; medical director of the Union National Life Insurance Company; died Dec. 16, aged 81, of arteriosclerotic heart disease.

Baker, Augustus Lynn Landon ⊕ Dover, N. J.; born in Ledgewood, N. J., April 9, 1885; Long Island College Hospital, Brooklyn, 1909; past president of the Morris County Medical Society; formerly member of the state board of health, and member of the board of education; served overseas during World War I; post surgeon at Picatinny Arsenal, a position he held for 20 years, retiring in 1942; for many years police and fire surgeon; affiliated with Dover General Hospital; vice-president and founder of the Randolph Building and Loan Association; died in the French Hospital, New York, Dec. 9, aged 67, of mesenteric thrombosis.

Dillard, George Penn ⊕ Draper, N. C.; Loyola University School of Medicine, Chicago, 1916; charter member of the American Academy of General Practice; past president and vice-president of the Rockingham County Medical Society; for many years served on the Leaksville Township School Board; medical examiner for the county draft boards during World Wars I and II; bank president and for many years president of the board of directors of the Y. M. C. A.; affiliated with Leaksville (N. C.) General Hospital; died Nov. 20, aged 60, of coronary occlusion.

Adams, Charles Taylor, Edwards, N. Y.; Syracuse University College of Medicine, 1907; served on the school board, and as president of the Edwards National Bank; affiliated with Edward John Noble Hospital in Gouverneur; died Nov. 22, aged 71, of coronary disease.

Baldwin, Aaron Grover, Waterford, N. Y.; Cornell University Medical College, New York, 1911; examining physician for the state workmen's compensation board for many years; served during World War I; died Nov. 25, aged 65.

Bondy, Julius ⊕ New York City; Columbia University College of Physicians and Surgeons, New York, 1904; died in Rye Oct. 4, aged 71, of arteriosclerosis.

Bonnar, James Miller ⊕ Middleboro, Mass.; University and Bellevue Hospital Medical College, New York, 1901; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society and the American College of Radiology; for many years affiliated with St. Luke's Hospital in New Bedford and the Fairmont (W. Va.) General Hospital; died Nov. 26, aged 74, of coronary thrombosis and myelogenous leukemia.

Brooks, Julius Culpepper ⊕ Chattanooga, Tenn.; Chattanooga Medical College, 1908; fellow of the American College of Surgeons; past president of the Hamilton County Medical Society; affiliated with Baroness Erlanger Hospital; died Nov. 18, aged 76, of cerebral thrombosis and Parkinson's disease.

Clement, Merton Wallace, Worcester, Mass.; Tufts College Medical School, Boston, 1901; past president, Worcester Civitan Club and past district deputy of Civitan International; affiliated with Worcester City Hospital; died Nov. 28, aged 73, of carcinoma of the sigmoid.

Earnest, Clarence E. ⊕ Pueblo, Colo.; University of Kansas School of Medicine, Kansas City, 1914; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; served during World War I; affiliated with Parkview Episcopal Hospital, Corwin Hospital, and St. Mary Hospital, where he died Nov. 16, aged 65, of gastric carcinoma with metastasis to the liver, lungs, and brain.

Edwards, Edwin Douglas ⊕ Dallas, Texas; Barnes Medical College, St. Louis, 1910; an Associate Fellow of the American Medical Association; member of the Missouri State Medical Association; died Nov. 14, aged 70.

Fritschle, William E., Olney, Ill.; University of Louisville (Ky.) Medical Department, 1893; past president of the Richland County Medical Society; served as mayor; died in St. John's Hospital, Springfield, Nov. 21, aged 83, of carcinoma of the bladder and coronary embolism.

Furman, Horace S., Noble, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1888; served as school physician for the Cheltenham Township public school and dispensary; physician for the Standard Pressed Steel Company in Jenkintown; died in Abington (Pa.) Memorial Hospital Nov. 25, aged 89.

Gillilan, Virgil Eugene, Chanute, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1901; died Nov. 30, aged 75, of chronic myocarditis.

Griswold, Dwight ⊕ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1943; certified by the National Board of Medical Examiners; served during World War II; died in McCook Memorial Hospital Nov. 8, aged 35, of poliomyelitis.

⊕ Indicates Member of the American Medical Association.

Grogan, John Sebastian ⊕ Wadena, Minn.; Northwestern University Medical School, Chicago, 1914; died Oct. 22, aged 72, of coronary disease.

Hinds, Robert Watson ⊕ Pembroke, Mass.; Harvard Medical School, Boston, 1910; died in Lake Worth, Fla., Oct. 10, aged 71, of cerebral thrombosis and arteriosclerosis.

Hirshson, Israel Harrison, Brooklyn; Long Island College Hospital, Brooklyn, 1929; medical inspector of the department of health, bureau of social hygiene; affiliated with Metropolitan Hospital; died in Jewish Hospital recently, aged 46.

Holliday, Eldred Glencairn, Cambridge, Ohio; Ohio State University College of Medicine, Columbus, 1911; served during World War I; died in Swan Hospital, Nov. 16, aged 68, of carcinoma of the pancreas.

Hugo, Donald George ⊕ Oshkosh, Wis.; Milwaukee Medical College, 1911; died recently, aged 62, of cerebral thrombosis and hypertension.

Jackson, Leonidas Fenton ⊕ Panola, Ala.; Birmingham Medical College, 1901; died Dec. 8, aged 79, of cancer.

Michie, Donald Ervin ⊕ Marion, S. C.; Medical College of the State of South Carolina, Charleston, 1934; served overseas during World War II; formerly secretary-treasurer of the Lee County Medical Society; died in St. Joseph's Hospital, Savannah, Ga., Oct. 26, aged 50, of acute myocardial infarction.

Newman, Joseph Thomas ⊕ New Haven, Conn.; Yale University School of Medicine, New Haven, 1919; for many years surgeon of the New Haven Fire Department; affiliated with St. Raphael Hospital, where he died Nov. 27, aged 57, of mesenteric thrombosis and intestinal gangrene.

Patrick, Florence D., Laramie, Wyo.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; died Oct. 16, aged 94, of cancer of the stomach and gallbladder.

Peltz, Alberta ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1918; certified by the National Board of Medical Examiners; fellow of the American College of Surgeons; for many years on the staff of Woman's Hospital, where she died Nov. 21, aged 64, of carcinoma of the breast.

Prushanskin, Harry Heman, Philadelphia; Medico-Chirurgical College of Philadelphia, 1906; died in Methodist Hospital Nov. 26, aged 71, of metastatic carcinoma of the sigmoid.

Rankin, Charles Austin ⊕ McKeesport, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; affiliated with McKeesport Hospital; died Nov. 9, aged 78, of a heart attack.

Rosendorff, Max, Portland, Ore.; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1903; died in St. Vincent's Hospital Nov. 17, aged 74, of coronary thrombosis.

Sears, George L. ⊕ Manti, Utah; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; for many years president of the Manti City Bank; died Nov. 22, aged 75, of heart disease.

Sheep, William Lloyd ⊕ Brigadier General, U. S. Army, retired, Washington, D. C.; George Washington University School of Medicine, Washington, D. C., 1906; specialist certified by the American Board of Surgery; fellow of the American College of Physicians; entered the medical corps of the U. S. Army in 1910; retired Oct. 31, 1945; died in Walter Reed General Hospital Dec. 6, aged 71, of adenocarcinoma of the colon and postoperative pulmonary embolism.

Skinner, William Clare ⊕ Detroit; University of Michigan Medical School, Ann Arbor, 1919; affiliated with Mount Carmel Mercy Hospital, where he died Nov. 23, aged 60, of nephritis and uremia.

Sparks, Francis O., Nevada, Mo.; (licensed in Kansas in 1901); died Oct. 15, aged 80.

Spencer, George Frederick Allen, Ware, Mass.; Albany (N. Y.) Medical College, 1881; for many years chief of staff of the Mary Lane Hospital; served on the board of health and as school physician; died in Brookfield Nov. 17, aged 95.

Stanton, William Joseph, Washington, D. C.; Georgetown University School of Medicine, Washington, 1911; served on the staffs of Doctors Hospital, Providence Hospital, and Georgetown University Hospital, where he died Nov. 29, aged 64, of a pulmonary neoplasm and cerebral arteriosclerosis.

Starr, Robert Sythoff ⊕ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1901; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served during World War I; affiliated with New Britain (Conn.) General Hospital, Manchester (Conn.) Hospital, Windham Community Memorial Hospital, Willimantic, Institute of Living, and Hartford Hospital, where he died Nov. 26, aged 78, of cerebral thrombosis.

Stewart, Charles Constantine, Greensboro, N. C.; Howard University College of Medicine, Washington, D. C., 1911; died Oct. 7, aged 67, of hypertensive cardiovascular renal disease.

Stokes, Percy Bethel ⊕ Norfolk, Va.; Medical College of Virginia, Richmond, 1917; part owner of the McCoy-Stokes Hospital; died in Blowing Rock, N. C., Sept. 6, aged 60, of a heart attack.

Strode, Basil Ellis, Richmond, Va.; Medical College of Virginia, Richmond, 1912; served during World War I; died in the Veterans Administration Hospital, Kecoughtan, Nov. 26, aged 64.

Taylor, Robert Hay, Sykesville, Md.; Medical College of Virginia, Richmond, 1941; served during World War II; died Oct. 11, aged 39.

Tooker, Frederick Jagger, Summit, N. J.; New York University Medical College, 1897; physician in China for many years for the Presbyterian Board of Foreign Missions; died in Ocala, Fla., Dec. 17, aged 80, of acute coronary thrombosis.

Underwood, Gordon Brooks ⊕ Evansville, Ind.; Tufts College Medical School, Boston, 1909; member of the American Academy of Dermatology and Syphilology; formerly county health officer; affiliated with Welborn Hospital, St. Mary's Hospital, and the Deaconess Hospital, where he died Nov. 10, aged 67, of congestive heart failure.

Ward, John La Bruce ⊕ Asheville, N. C.; Medical College of South Carolina, Charleston, 1905; specialist certified by the American Board of Pediatrics; served as a member of the state board of medical examiners; epidemiologist for the American Expeditionary Forces during World War I; affiliated with Asheville Memorial Mission Hospital, Asheville Colored Hospital, St. Joseph's Hospital, and Aston Park Hospital; died in Victoria Hospital Oct. 16, aged 70, of acute myocardial infarction and coronary thrombosis.

Washburn, Chester A., Chicago; the Hahnemann Medical College and Hospital, Chicago, 1908; died in the Augustana Hospital Dec. 22, aged 71, of cardiac failure.

White, Reid Jr. ⊕ Lexington, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1926; physician to the Washington & Lee University; served during World War II; died in the Memorial Hospital, New York, Dec. 4, aged 52, of bronchogenic carcinoma.

Wiesner, Edwin Elmer ⊕ Tamaqua, Pa.; Medico-Chirurgical College of Philadelphia, 1903; a director of the Tamaqua National Bank for many years; died Nov. 3, aged 74.

Wilson, Russell Bate, Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1917; served overseas during World War I; later joined the U. S. Public Health Service; died Nov. 6, aged 62, of coronary occlusion.

Weber, Henry Clarence ⊕ Bartlesville, Okla.; College of Physicians and Surgeons, Baltimore, 1905; fellow of the American College of Surgeons; served as president of the Oklahoma State Board of Medical Examiners; past president of the Oklahoma State Medical Association; a trustee in the Oklahoma Blue Cross and Blue Shield; affiliated with Washington County Memorial Hospital; director in the Public Service Company of Oklahoma; director in the Union National Bank; died Dec. 10, aged 70, of coronary occlusion.

GOVERNMENT SERVICES

ARMY

Donations to Korean Children's Amputee Fund.—Lt. Gen. Paul W. Kendall, seated at the left in the picture, accepts a contribution of 18,813,000 won ($3,136) for the U. S. I. Corps Korean Children's Amputee Fund from ROK Col. Kim Ung, seated at the right, on behalf of the 101st Korean Service Corps Division. More than $75,000 had been raised for the fund as of Nov. 29, 1952. Others at the ceremony were officers from the staff of I Corps, which General Kendall commands. They are, standing from left to right in the figure: Col. Albert H. Dickerson, 117 S. Kentucky, Iola, Ky., civil affairs officer; Lt. Col. Asbury D. Snow, 175 Mall St., Athens, Ga., special services officer; Chaplain (Lt. Col.) Alvie L. McKnight, Cleveland, Miss., assistant corps chaplain; Col. Rollin L. Bauchspies, 416 North St., East Mauch Chunk, Pa., corps surgeon; Col. Clifford F. Cordes Jr., 2754 Hyde Park Ave., Cincinnati, staff judge advocate; and Lt. Col. Louis B. Besbeck, 156 Seal Rock Dr., San Francisco, public information officer.

I Corps officers accepting stacks of money from Korean 101st Division.

Monthly Medical Meeting.—Dr. Irving S. Wright, professor of clinical medicine, Cornell University Medical College, New York, and president of the American Heart Association, reviewed the methods used in treating occlusive arterial disease at the Surgeon General's monthly medical meeting, Jan. 15, at Walter Reed Army Medical Center, Washington, D. C. Dr. Wright was introduced to the capacity crowd in Sternberg Auditorium by the Acting Surgeon General, Major Gen. Silas B. Hays. His presentation was discussed by Dr. Andrew Prandoni, consultant on cardiovascular problems, Brig. Gen. Sam Seeley, chief of surgical service, Walter Reed Army Hospital, and by Col. Thomas W. Mattingly, chief of the cardiovascular-renal section.

VETERANS ADMINISTRATION

New Hospital Managers.—Appointment of new managers for Veterans Administration hospitals at Batavia, N. Y., and Palo Alto, Calif., has been announced. The new managers, both of whom have been serving as chief of professional services at their respective installations, are Dr. Ezra R. Bridge, who becomes manager at Batavia, and Dr. John R. Prusmack, who will have charge of the Palo Alto hospital. Dr. Bridge succeeds Mr. Charles F. Sargent, who died recently. Dr. Prusmack takes over for Mr. Albert W. Waldron, who is retiring. Dr. Peter J. Volpe, manager of the VA Hospital at Aspinwall, Pa., will succeed Dr. Kelso A. Carroll as manager of the 3,092 bed general medical and surgical hospital at Hines, Ill. Dr. Carroll has been transferred to the VA Central Office in Washington, D. C., as assistant chief medical director for professional services.

PUBLIC HEALTH SERVICE

Sewage Treatment Facilities in Defense Areas.—A grant of $131,885 to Las Cruces, N. Mex., to provide improvements in sewage treatment facilities in a defense area, has been approved by the Surgeon General. The grant will meet half the cost to the city. Las Cruces is 12 miles west of White Sands Proving Ground. Its population, which was 8,358 in 1940, is expected to reach 16,000 when homes under construction are occupied. A grant of $181,655 was made to Ozark, Ala., to cover a proportionate share of the cost of intercepter sewers, a force main, four pumping stations, and a sewage treatment plant. A loan of $28,000 and a grant allocation of $68,400 were made to Swansboro, N. C., to cover the cost of an intercepting sewer, a pumping station, and a plant providing primary treatment for sewage. Ozark is about seven miles east of Camp Rucker, an Army training camp. Ozark population has grown from 5,226 to 8,500. Swansboro is near Camp LeJeune Marine Base and the Cherry Point Marine Aviation Base. Its population, which was 559 in 1950, approached 2,000 in 1952. Under the Defense Housing and Community Facilities Act Congress gave the Housing and Home Finance Agency and the Federal Security Agency joint responsibility for federal aid to meet community public works needs in critical defense housing areas. The aid is limited to the extent that local public bodies are financially unable to supply the increased facilities to serve needs created by defense activities.

Effects of Industrial Wastes on Aquatic Populations.—The Environmental Health Center of the Public Health Service is undertaking a program to determine the effects of industrial wastes on aquatic populations. These investigations are part of an overall program for the detection, evaluation, and abatement of industrial waste pollution. Research projects being carried out include the development of rapid biological methods for determining the extent of stream pollution and for evaluating the effects of pollution on aquatic organisms. Since the development and persistence of an aquatic population indicates an environment that meets the requirements of the various species, year round studies are being made to determine variations in habitat conditions in each pollutional zone. Once the relationship between stream environment and the resulting stream population has been established, it may be possible to reverse the process in other streams and use the aquatic population to infer the environmental conditions under which they have developed in the stream. The importance of protecting the fisheries of the United States for their commercial and recreational value is obvious. It may be possible to use stream populations as an indication of the quality of water for human use.

Mental Health Clinical Director Appointed.—The Surgeon General announces the appointment of Dr. Robert A. Cohen as clinical director of the National Institute of Mental Health. Dr. Cohen comes to the Public Health Service from Chestnut Lodge, Rockville, Md., where he has been clinical director since 1948. As head of clinical investigations for the Mental Health Institute, he will conduct a program of clinical research in mental diseases and psychotherapy in the clinical center nearing completion at the National Institutes of Health at Bethesda, Md. Dr. Cohen received his degrees of doctor of medicine and doctor of philosophy in neurophysiology at the University of Chicago in 1935 and entered psychiatric training at Johns Hopkins University under Dr. Adolf Meyer in 1937. From 1941 to 1946, he was a medical officer in the U. S. Navy. He is a member of the Panel on Human Relations of the Research and Development Board, Department of Defense, a consultant in psychiatry at the National Naval Medical Center, and president of the Washington Psychoanalytic Society.

Personal.—Dr. Alonzo F. Brand, medical director, Public Health Service Region X, San Francisco, has been named chief of the public health division, TCA Mission to Thailand. Also assigned overseas is Dr. Paul Q. Peterson, who will be chief of the public health division, MSA Mission to Formosa.

FOREIGN LETTERS

BRAZIL

Campaign Against Malaria, American Trypanosomiasis, and Filariasis.—The malaria division of the National Department of Health published a summary of its activities from 1942, the year of its foundation, to 1951. Before 1950, the fight against malaria constituted the main objective of the division, but from then on a program of control of American trypanosomiasis (Chagas' disease) was started to comply with an executive order issued in December of that year. In August, 1951, the Minister of Health directed the malaria division to study the incidence of filariasis (bancroftosis) in Brazil and to carry out adequate control measures wherever indicated. The work against filariasis was begun with the execution of two surveys.

Before the advent of DDT, the fight against malaria was based mainly on antilarval measures (water sanitation and the use of larvicides) in the areas where the disease is transmitted by species of the genus Nyssorhynchus (darlingi, tarsimaculatis, and albitarsis), and by picking up bromeliaceae and cutting down woods in the districts where the vectors are of the genus Kerteszia (cruzi and bellator). At present malaria control is based essentially on the spraying of DDT inside dwellings, this method having been applied during 1950 in 2,603,023 houses in about 50,000 localities of almost 900 counties, with an approximate population of 25 million. The summary contains data demonstrating the excellence of the results obtained through the use of DDT. The reduction in the incidence of the disease in sprayed areas is in general very good (90% and higher).

The campaign against trypanosomiasis was begun in the second half of 1950 in some areas of the states of Minas Gerais (the Triangle and the Southwest) and São Paulo (123 counties with an area of 213,000 square kilometers and an aggregate population of 3,500,000), where the principal vector is Triatoma infestans. The campaign is carried out through the destruction of domestic triatomids by means of insecticides such as benzene hexachloride (BHC) and rhodiatox, mainly the former, applied in a minimum dose of 0.5 gm. of the gamma isomer and 0.4 gm. of thiophosphate per square meter, respectively.

Up to Dec. 31, 1951, a total of 130,084 houses have been sprayed for the destruction of triatomids in the states of São Paulo and Minas Gerais. Investigations to determine the extent of the disease have been carried out in other states. Up to the end of December, 1951, the survey to disclose the distribution of domiciliary triatomids had been performed in 6,948 localities of 243 counties of Brazil, about 100,000 triatomids having been captured and identified. Out of this total, about 33,000 were examined for the determination of the natural infection index by Trypanosoma cruzi.

The first stage of the campaign against filariasis includes epidemiological surveys, already begun in several cities of the country, and the attack on this disease in the city of Belém, state of Pará, consisting mainly in intradomiciliary application of BHC. Forty-three thousand houses of the city are being sprayed, quarterly, with an average dose of 0.3 gm. of the gamma isomer per square meter in each application. The known carriers of microfilarias are being treated with 1-diethylcarbamyl-4-methylpiperazine (hetrazan®) hydrochloride, aiming at the reduction of the sources of contamination of Culex fatigans, the principal mosquito vector of the disease.

Antihistaminic Treatment of Myelopathy Following Rabies Vaccination.—In March, 1952, Dr. Antonio B. Lefevre of the department of neurology of the São Paulo State University published a paper in which he emphasized that modern research on the demyelinizing diseases of the nervous system are almost exclusively oriented toward the analysis of their pathogenesis, particularly in the field of encephalomyelopathy, through the use of emulsions of cerebral extracts as adjuvants. Very few papers have been published presenting the experience of those physicians who admit an allergic pathogenesis for that group of diseases. Dr. Lefevre and Dr. Abrahão Anghinah reported the successful treatment of two cases of myelopathy following rabies vaccination with phenergan (10-[2-dimethylaminoisopropyl]-phenothiazine). One of the patients had a severe ascending myelopathy with sensory and motor disturbances in the upper limbs when the treatment was started. The progress of the disease was interrupted just after the beginning of the treatment with almost total regression of the clinical picture. The other patient also showed definite improvement, although the regression was less spectacular, because of the lesser severity of the clinical manifestations. Although it is not possible to draw a clear conclusion on the basis of two cases of a disease so variable in evolution, it is gratifying to report on the clear improvement in both patients with the beginning of the treatment.

CHILE

Congress of Cardiology.—Among the presentations by Chilean delegates at the fourth Inter-American Congress of Cardiology (*J. A. M. A.* **151:**402 [Jan. 31] 1953) was the report by D. Lamas, who studied diagnostic errors in rheumatic and syphilitic valvular diseases. A review was made of valvular lesions with orificial defects of either rheumatic or syphilitic origin, in patients who died in the medical section of the Salvador Hospital from 1940 to 1949. The causes of diagnostic errors were analyzed. Among 260 rheumatic cases, 32.3% of the patients were over 50 years of age, subacute bacterial endocarditis was extremely frequent in 40.3%, and the survival period after the occurrence of cardiac failure was short. The existence of valvular defects remained unknown in a quarter of the cases. The main factors in erroneous diagnosis were old age of the patient and the fact that the valvular defect was not the only cause of death. Other factors were the unfavorable conditions of examination, insufficient auscultation, and short hospitalization periods. Syphilitic aortic insufficiency frequently remained undiscovered. In the presence of an aortic insufficiency, syphilitic etiology was more commonly ignored than diagnosed by mistake.

Electrokymography.—Drs. G. Dussaillant, G. Gomez, and their colleagues reported their experience in clinical studies using electrokymography in cases of tumor, aneurysm, pericarditis, and coronary disease. In aneurysms and paramediastinal tumors, the electrokymogram has made differential diagnosis possible, since it shows with more accuracy than other methods the diffuse expansive or simply transmitted character of movements of the abnormal structure. In pericarditis most typical modifications were observed in the electrokymogram (fibrillatory decrease and deformations *in plateau*). In the latter, the alterations are modified according to the functional restitution after pericardiectomy, and normalization of the electrokymogram could be achieved.

In cases of myocardial infarction the electrokymogram shows almost constant alterations. In the majority of cases the anomalies were considered as characteristic of a localized and evident myocardial lesion (paradoxical movement, myocardial paralysis), five different types of curves being found. The speakers concluded that the electrokymogram is an important element for the diagnosis of infarction.

Circulatory Constants During Congestive Heart Failure.—Dr. A. Kusmanic presented a study on variations of circulatory constants during congestive heart failure. This paper includes 34 observations of patients with congestive heart failure of different degree and etiology. In all of them, the curve followed by weight and pulse was observed, and serial determinations were taken of venous pressure and blood volume during the compensation process induced by digitalis treatment, mercurial diuretics, and low salt diet. Similar observations on the same patients were repeated during the decompensation induced by the administration of sodium chloride and interruption of medi-

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The items in these letters are contributed by regular correspondents in the various foreign countries.

cal treatment. Relationships between the manner of evolution of constants and several circumstances, such as age of the patient, time of cardiac failure, etiology of the process, type and degree of decompensation, and severity of the lesion of the heart, were observed, as were also the mutual relations of variations of these constants, especially the possible interdependency of blood volume, venous pressure, and liquid retention. The final results lead to criticism of the physiopathological concepts of heart failure that have been in vogue for years.

Chronic Constrictive Pericarditis.—Prof. H. Alessandri and colleagues presented the results of their experience with chronic constrictive pericarditis. The authors analyze their experience with 30 patients on whom diagnosis was made during a period ranging from September, 1940, to July, 1951. They note the important facts observed, their symptomatology, physical examinations, etiology, pathological anatomic evolution, prognosis, x-ray findings, and results of electrocardiography, electrokymography, and laboratory examinations used in procuring a correct diagnosis.

They offer their views on the advisability of the use of surgery and particularly on the preparation of the patients for surgery, on the administration and effects of streptomycin, on the various surgical techniques, and on the results obtained in 18 pericardiectomy cases.

Cardiac Catheterization.—Dr. P. Falgarete and colleagues presented a study of catheterization of the right heart in congenital heart diseases and in mitral stenosis. The data represented intracavitary pressures and gasometric determinations obtained by cardiac catheterization in 65 patients with different congenital heart diseases. Indications, risks, and complications of this method and its diagnostic value are discussed. The results in cases of pure mitral stenosis and in those with organic or additional functional alterations such as mitral insufficiency, tricuspid insufficiency, tricuspid stenosis, and auricular fibrillation are compared.

Ballistocardiography.—Prof. F. Rojas, Dr. E. Del Campo, and their colleagues discussed their experience in normal and pathological ballistocardiograms. This paper includes 100 ballistocardiograph tracings performed on normal subjects from a clinical, radiological, and electrocardiographic point of view. Fifty of these subjects are over 40 years of age. Characteristics of normal tracings are analyzed as well as their variations in relation to different age groups. The value of ballistocardiograms in relation to other methods of examination in the investigation of the circulatory conditions under observation is analyzed.

ISRAEL

Nutrition and Housing.—Nutrition and housing are two constant sources of anxiety. Bearing in mind that 50% of the world's population is suffering from malnutrition, largely because of inadequate production and partly through irrational feeding habits, it is easy to understand why the health service is involved. Recently a health survey was carried out on a small scale by Professor Strauss and Dr. Bernau in a selected population with the object of studying the effect of austerity on public health.

The future of nutrition in this country will be decided by progress in agriculture, animal husbandry, and fisheries. Paucity of sheep in Israel, because of insufficient utilization of available pasture, has resulted in the loss of some millions of pounds and, of course, a considerable source of food. As for fisheries, it is obvious that Israel is lacking in equipment, manpower, and experience. It is safe to prophesy that Israel for many years to come will depend on imports from abroad for its food supply.

The housing problem is of prime medical and social importance. It would have been too much to expect a young country to double both its population and its housing within the short space of four years, but explaining a difficult situation is no contribution to its alleviation. A housing shortage, which in many cases among the poorer and less sanitary sections of the community condemns five or six persons to sharing one room, is liable to become a very costly affair, both medically and economically.

Public Health Problems in Heterogeneous Society.—Experience has shown that the most excellent public health schemes are useless, or almost useless, unless the general public is sufficiently educated to appreciate them and translate them into daily life. The public health worker and physician in Israel, however, labor under a considerable disadvantage because of the heterogeneous social background and cultural levels prevailing among the different immigrants from various countries. This is probably the greatest of all difficulties that the local hygienist has to face. The fact that some groups of recent immigrants have a 60 to 80% infection rate with trachoma is not in itself frightening, because past experience has taught the local physician that this high infection rate can be reduced to negligible proportions within a few years. Nor is the medical profession alarmed by the presence of some 20,000 to 40,000 cases of schistosomiasis among recent arrivals from Yemen and Iraq, although the sanitary authorities will have to remain on the alert in order to prevent the formation of local endemic centers.

The real problem is not how to formulate but how to enforce modern hygiene in a mixed population containing primitive elements to whom the conception of modern hygiene is foreign. Ultimately the hygienic potential of a community is determined by its lower levels just as economic standards are gaged by the lower income groups. The whole problem is bristling with difficulties for the health department, not because of technical deficiencies but because a position that calls for the cooperation of social scientists, and particularly of social anthropologists, was not envisaged in 1948. Now that the position has become clarified, the medical services will no doubt include experts in these fields who, in addition to useful practical work, will be able to gather a rich scientific harvest for themselves.

In spite of inevitable handicaps and economic distress of the country, the health department has several important achievements to its credit, notably the reduction of malaria to such an extent that this disease no longer presents a formidable economic obstacle to the development of the country. Facilities for hospitalization have improved very considerably during the last four years, although they are still inadequate, particularly for infectious and mental diseases.

Shortage of Physicians and Dentists.—The present condition of curative medicine in the country is quite good. The standards are high and are continually improving, and the frequent visits of experts from abroad serve as a source of inspiration for the local physicians. On the other hand, the basic sciences, such as anatomy, physiology, and pharmacology, which are the very foundation of scientific medicine, suffer badly from a local manpower shortage. Israel will either have to import specialists from abroad or wait until it can train its own men in these vital branches.

At present Israel has approximately two physicians per 1,000 population, but this figure is deceptive. The overwhelming majority of practicing physicians are in their 50's and 60's, while young physicians in their late 20's and 30's are very scarce. There are obvious reasons for this peculiar local age distribution in this profession. Higher education came to a full stop during World War II for the Jews of Europe who supplied Israel with physicians. Israel had no medical school. In order to forestall a dangerous situation the university and Hadassah were compelled to open a medical school in Jerusalem sooner than they had originally intended.

The position with regard to dentists is even more unsatisfactory, because the number of university-trained dentists is inadequate for the needs of the population, the number of young dentists is almost negligible, and there is as yet no dental school in the country. A dental school attached to the medical faculty is an urgent necessity. The government has made a bad situation worse by granting licenses in dentistry to unqualified persons. This was possible only because Israel does not possess an authorized body (corresponding to the General Medical Council in Great Britain) that regulates medical practice and protects both the practitioner and the general public. Obviously the restriction of dentistry to properly trained and qualified personnel is primarily a protection for the general public and secondarily a protection for the qualified dentists. The establishment of a general medical council is a matter of immediate importance for Israel.

ITALY

Conventions of Medicine and Surgery.—In October the Italian societies of medicine and surgery held the two most important national conventions of the year in the city hospital of Venice, with more than 2,000 persons present.

Intracranial Hypotension. — Intracranial hypertension and hypotension was discussed by the two societies together. Prof. E. Greppi, of the University of Florence, and his assistant, Prof. R. Martinetti, discussed the medical point of view, and Prof. A. Chiasserini, from the Ospedali Riuniti of Rome, discussed the surgical point of view. The functions of the fluid were reviewed, and the question of its source was discussed. According to the speakers, its greatest source is the choroid plexuses, but another encephalic source outside of the same plexuses should not be excluded. With regard to the correlation between the intracranial pressure and the general arterial pressure, these are the conclusions reached: 1. An intracranial hypertension, especially if sudden, easily produces an arterial hypertension, probably because of a hypoxemic mechanism at the level of the nerve centers. 2. In arterial hypertensive disease there is a tendency toward high values of the intracranial pressure. 3. A drop in arterial pressure after a lumbar puncture should be considered not a direct consequence of the removal of a small quantity of fluid but the result of a nonspecific hypotensive stimulation of the puncture itself. As for headaches, even though the speakers found no clear correlation between increased intracranial pressure and the headaches common in patients with rheumatic fever, they admit that an intracranial hypertension may, in many forms of headache, represent a factor that stimulates the pain-producing structures in the brain. Professor Greppi classified the various clinical pictures due to intracranial hypertension and recalled the angioneurotic hydrocephalus as expressive of vessel-tissue imbalance. The well-known roentgenographic characteristics—distention of the diploic vascular network, small findings at the margins of the sella turcica, and diffuse opacity of the cranial shape—were discussed, as were the various pharmacological and dietetic regimens.

Professor Chiasserini discussed the various surgical techniques: removal or cauterization of the choroid plexuses, means of opening new outlets for the excess fluid such as a craniopharyngeal outlet through the mastoid, and the anastomosis between the ureter and the vertebral region to deviate the excess fluid from the spinal cord into the vesica. The speaker reviewed and praised the contributions of North American neurosurgery.

Grafts and Transplants.—The second subject, the present status of use of grafts and transplants, was discussed by Prof. G. M. Fasiani, from the University of Milan, and by Prof. V. Pettinari, from the University of Padua, who introduced the coworkers of the respective schools: Gallone, Staudacher, Morello, Radici, and Riquier (Milan) and Pais (Bologna).

The reaction of incompatibility of the host to homologous tissues (homoplastic grafts) in contrast to the successful growth of the patient's own tissue, as happens in the autoplastic grafts, was interpreted as an expression of a mechanism of immunization: stimulus-antigen, reaction-antibody. It is for this reason that many grafted tissues are later destroyed and expelled; however, even if the tissue is expelled, the graft may be a therapeutic factor in guiding the host's processes of reparation and regeneration. The tissue from another member of the same species, even though it does not grow as firmly and as functionally as an autoplastic tissue, has its own stimulating action in the regeneration of the area in which it was transplanted; it is almost like a "guide" to the renewal of the tissue of the host and stimulates it to repair the missing tissues with means of its own.

This, of course, is true for the area in which this guide is possible, as in the case of skin grafts, whereas for other areas—vessels, nerves, and bones—the homoplastic graft is much more difficult. As for the grafting of endocrine glands, the two speakers had different ideas: Professor Fasiani was rather skeptical about the growth of endocrine glands, whereas Professor Pettinari, supplementing his assertions with microphotographs, was much more optimistic and in favor of it. They also spoke of the study of grafts with embryonic tissue, a method greatly supported in North America by Greene.

Acute Pancreatitis.—Prof. M. Carravetta, from Trieste, and his assistant, Professor Stefanini, reported on the clinical picture of the "acute abdomen." After a general classification of pancreatitis, they discussed the allergy that arises in the pancreas when the bile, because of obstruction or other disturbances in its ways of defluxion, returns to the pancreas. It is not a trivial fact of contact that chemically produces such a great quantity of pancreatic enzymes that cause digestion of the pancreas itself, but it is a destruction with typical vascular and exudative manifestations due to pancreatic allergy. Prepared by previous latent lesions, the pancreas becomes allergic to the bile that moves toward it, and the allergic reaction produces the picture that is almost always fatal.

The question arose of whether or not an operation should be performed. The speakers suggested using the greatest prudence, operating only when it is no longer possible to wait. Then one must amputate the head or the tail of the pancreas and accept the consequences. As for shock associated with acute pancreatitis, the usual methods to help the patient out of his circulatory collapse were suggested. No mention was made of the use of cortisone in patients with acute pancreatitis. On the other hand, a sensational case in which cortisone was used was recently reported in the *A.M.A. Archives of Surgery* and had great repercussions in the Italian scientific world.

LONDON

International Vaccination Certificates.—The Ministry of Health has issued some notes for general practitioners on the new international certificates of vaccination, which came into force on Oct. 1. They cover protection against yellow fever, cholera, and smallpox. The term vaccination is now used internationally for all three diseases, replacing inoculation used up to now for yellow fever and cholera. There is no international certificate for any disease other than the three named, the existing certificate for typhus having been discontinued, as no other vaccination is required internationally.

Yellow fever vaccination must be done at a center designated by the government. International certificates can therefore be obtained only at these centers, and general practitioners will not be concerned with them. A cholera certificate remains valid for six months and a smallpox certificate for three years. If a first attempt at primary vaccination for smallpox fails, at least two more attempts with different vaccines are recommended, each attempt (with its date) being recorded on the certificate and each failure being shown as unsuccessful. If such a certificate is produced abroad, the question of further vaccination will then be one for the health authorities there.

Registration of Overseas Physicians.—The new regulations provide for the registration of overseas applicants who hold recognized diplomas granted in the British Commonwealth or foreign countries that have reciprocity with the United Kingdom. An applicant for full registration must satisfy the General Medical Council: (1) that he has fulfilled the requirements for persons qualified in the United Kingdom; (2) that he has rendered satisfactory service in appointments conferring experience in the practice of medicine, surgery, and midwifery, not less extensive than that required for persons qualified in the United Kingdom; or (3) that he has acquired experience in other specialties not less extensive than that required for persons qualified in the United Kingdom. An overseas applicant who is newly qualified and who wishes to obtain in due course full registration in the United Kingdom may apply for appointment as a house officer in a recognized post in an approved hospital in the United Kingdom. After being selected for a preregistration post he may then apply to the G. M. C. for provisional registration, supporting his application with a certificate of appointment from the hospital authority that appointed him. At the end of a preregistration appointment the practitioner must obtain a certificate from the hospital authority showing the duration of the period for which he was employed and stating whether his service was satisfactory. When he has satisfactorily completed his year's preregistration appointments, he may apply for full registration to the G. M. C.

Entry into Practice.—One of the strongest arguments put forward by the protagonists of the National Health Service during the parliamentary debates in 1946 was that young physicians would find it much easier to establish themselves in practice. Ironically the opposite has proved true, and, despite a general awareness of the problem, little has been done to correct it; however, the Danckwerts award, whereby general practitioners receive certain benefits, established one important new principle, the full significance of which has not been fully appreciated by physicians. Total remuneration is now firmly linked with the number of physicians in the N. H. S. Every new entrant will now attract $7,000 to $8,400 to the central pool. It will normally be many years before he receives anything like this sum. Meanwhile, his colleagues are the gainers, and they surely have a moral responsibility to see that he receives a just reward for his work.

Another unexpected anomaly of the N. H. S. is found in the hospital service. With the expansion of this service following the passing of the act, the number of posts equivalent in status to resident medical or surgical officer has greatly increased and the incentive to acquire experience and higher degrees before entering general practice has disappeared. No longer can the young man who is a fellow of the Royal College of Surgeons settle in general practice and continue to practice some surgery. The hospital beds now belong to the new consultant. This situation is repeated in all the specialties (although to a lesser degree in obstetrics). In addition to this removal of incentive, there is now the feeling among many registrars that a higher degree and postgraduate experience are positive encumbrances when seeking entry into general practice. Small wonder then that the newly qualified physician, faced with a year in hospital after qualification and 18 months in the armed forces, will show some reluctance to delay his entrance into general practice by spending two or three more years in hospital work. In this crisis facing the hospital service the registrar is the key figure.

The origin of the trouble lies in the separate planning of the specialist and general practitioner services. It will only be solved when the basic interrelationship of the two services is acknowledged and when practical measures are taken to bridge the existing gap. The first thing to be done is to bring back the incentive to do hospital work. This will come about only if experience and higher degrees can be shown to offer better financial and professional standing in subsequent general practice.

Treatment of Pulmonary Tuberculosis with Isoniazid.—In February, 1952, preliminary announcements were made in the American press concerning the effects of isonicotinic acid hydrazide (now termed isoniazid) in clinical tuberculosis. The announcements were followed by medical statements concerning the experimental and clinical evidence of this drug's action on tuberculosis infection. In view of the impressive nature of the evidence, the Medical Research Council appointed a tuberculosis chemotherapy trials committee to plan trials of the new drug, and selected hospitals were invited to cooperate. In March a clinical trial in pulmonary tuberculosis was begun under the auspices of the committee. The isoniazid used for the trial was supplied as nydrazid® by E. R. Squibb and Sons.

In a clinical trial of isoniazid 331 patients with various forms of pulmonary tuberculosis were studied: 173 were treated with isoniazid, 200 mg. daily, (patients H), and 158 with streptomycin, 1 gm. daily, plus *p*-aminosalicylic acid, 20 gm. daily, (patients SP). Treatment was randomly allocated in all cases, and at the time of selecting a patient the treatment that he would receive was unknown to the physician. The present interim report analyzes the results at the end of three months' treatment and observation. The trial is still in progress with over 750 patients. Three main groups were observed: group 1, with acute rapidly progressive disease of recent origin; group 2, with other forms suitable for chemotherapy; and group 3, with chronic disease considered unlikely to respond to chemotherapy. On admission the two treatment series had a similar distribution of patients with severe and less severe illness.

Isoniazid showed low toxicity at the dosage used and for the period of three months. At the end of three months there was more improvement in general condition in patients H than in patients SP, but the differences are not great. Average weight gains were considerably greater in the H patients (4,989 gm.) than in the SP patients (2,721 gm.). Temperatures fell to normal in 67% of febrile SP patients and in 56% of febrile H patients; in the acute group 1, temperature fell to normal in 64% of SP cases and 68% of H cases. Sedimentation rates that were over 20 before treatment fell to 10 or less in 22% of SP cases and 20% of H cases. The radiological changes were independently assessed; 2+ or 3+ improvement was seen in 29% of SP cases and 26% of H cases; in the acute group, it was seen in 37% of SP cases and 40% of H cases. Under streptomycin plus *p*-aminosalicylic acid there was radiological deterioration in 1 case and three deaths; under isoniazid, deterioration was seen in 10 cases and there was one death. The proportion of cases becoming bacteriologically negative before the end of the second month was 26% for SP cases and 23% for H cases.

The conclusion, judging wholly from short-term results, is that isoniazid is a very effective drug in pulmonary tuberculosis but given alone it is not more effective than streptomycin plus *p*-aminosalicylic acid. Bacillary resistance to isoniazid was found in 11% of cases at the end of the first month, in 52% at the end of the second, and in 71% at the end of the third. Lack of progress, as assessed by radiological change, was found to be related to the emergence of drug resistance. This is, therefore, a most serious problem affecting the use of isoniazid. The effects of combining isoniazid with other drugs are under study.

Circumcision.—Whether the continued popularity of the operation of circumcision depends on a herd belief in the validity of an ancient ritual or on its presumed value as a hygienic measure is impossible to say. So comments the *British Medical Journal* in an article by MacCarthy, Douglas, and Mogford in the issue of Oct. 4, 1952. These workers have been following up the growth, health, and development of 5,380 children, all born in the month of March, 1946. They were visited when aged 8 weeks, 2 years, and 4 years. They were subdivided into various social classes, and the probable reasons for the operation were tabulated. The complications of the operation were noted.

More than a third of the circumcisions were performed in the first month of life, at a time when faults or diseases of the prepuce itself are practically nonexistent. It is only during this period that social-class differences in circumcision are found. The operation is more often performed among the well-to-do than among manual workers. In the former classes the incidence of the operation is highest among the later-born children, whereas in the latter it is highest among the first-born.

When the medical profession, says the *British Medical Journal*, has realized that circumcision in the first three years of life is an unnecessary operation, the parents will soon be dissuaded from requesting it. The matter is not important enough for a national propaganda campaign addressed to the laity, who already suffer from a surfeit of exhortation. If those who teach pediatrics to medical students and those who lecture to midwives would remember to condemn the operation as a treatment for the nontractable prepuce of the infant, routine circumcision would again be no more than a religious ritual and an anthropological curiosity.

End of a Hospital.—The London Lock Hospital, famous for the treatment of venereal disease, is closing its doors after an unbroken history of over 200 years. Previously, in 1949, it was threatened with extinction but was saved by an outcry in the lay and medical press. The need for its existence does not appear to have altered, but the heavy hand of bureaucracy has decided otherwise, and another chapter in the history of medicine in England will thus end. Many famous men have been associated with it. John Hunter was a student there, and among its house surgeons may be numbered Addison, of pernicious anemia fame, and David Livingstone. The records from 1946 up to the date when the hospital was taken over by the regional hospital board are intact. They cover the history of the treatment of venereal disease in England from the time of John Hunter until today.

Royal Obstetrician.—The Princess Royal, sister of the late King George VI, has been admitted to the honorary fellowship of the Royal College of Obstetricians and Gynaecologists. The princess, in her speech acknowledging the honor, mentioned the recent growth in the teaching of "mothercraft" and the still more recent growth of what she called fathercraft. In her experience fathers were taking more interest in their young offspring than formerly—a development wholly to be welcomed.

SWEDEN

Museum of History of Medicine.—On April 22, 1952, the Swedish Medical Society appointed a committee, composed of some of the most distinguished representatives of the medical profession, to deal with the establishment of a national museum devoted to the history of medicine. Hitherto, ample material for such a museum has, indeed, existed, but it has not been centralized and housed in keeping with the requirements of the times. Much of this material is owned by the Swedish Medical Society, and some of it has been on exhibit through the cooperation of a leading firm of instrument makers. The suggestion has been made that the oldest part of the Serafimer Hospital should be converted into the proposed museum, henceforth to unite the objects of historical interest scattered throughout the country. Such a national museum should promote research and teaching and in time become for Sweden what the History of Medicine Museum in Copenhagen has become for Denmark.

Bicentenary of Serafimer Hospital.—The institution of the Serafimer Order by King Fredrik I led to the erection of the Serafimer Hospital, which admitted its first patient on Oct. 30, 1752. The beginning was modest, with only four beds in two rooms. Since then this hospital has enjoyed ever-growing recognition as a center of healing and learning. In his account of its history in the past two centuries, Dr. J. P. Strömbeck points out how closely it has been associated with the leaders of the medical profession in Sweden from time to time. Abraham Bäck, its first medical superintendent, was succeeded, in 1753, by Olof Acrel, "the Father of Swedish Surgery." During his long reign he trained many efficient surgeons, introduced new operations on the French pattern, and raised the number of beds to some 100. He remained the titular head of the hospital till his death in 1806 at the age of 89. While many of the hospital's patients were paupers, accommodation was also provided for patients who could pay.

During the first half of the 19th century the number of beds in the Serafimer Hospital rose to about 200, and toward the end of the century they numbered some 350. Magnus Huss did much to promote the teaching of clinical medicine, and in 1838 he opened three wards for clinical teaching. He did important work on typhoid fever and chronic alcoholism and was an opponent of indiscriminate blood-letting. During the present century the Serafimer Hospital has become famous at home and abroad in connection with Gösta Forssell, the radiologist, Herbert Olivercrona, the father of modern brain surgery in Sweden, and Jacobaeus, the sponsor of thoracoscopy. The name of Israel Holmgren is noted in connection with the reorganization of the hospital in 1929-1930. Since 1923 there has been a gradual shift of various hospital departments to other sites, and it is calculated that by 1961 this process will have been completed and the Serafimer Hospital will have concluded its more than 2-century-old career as a teaching hospital.

SWITZERLAND

Swiss Society of Internal Medicine.—Baden, the well-known Swiss spa, was the site of the annual meeting of the Swiss societies of cardiology, hematology, allergy, and internal medicine. The Swiss Society of Allergy, with Professor Loeffler as chairman, held its first meeting this year. The subject treated was alimentary allergy, which was discussed in its different aspects by Dr. Högl (Bern), Professor Bickel (Geneva), and Dr. Hafter (Zurich). All the speakers recognized the obscurity and confusion that still characterize this broad problem.

Some of the most interesting features of the annual meeting of the Swiss Society of Internal Medicine were the clinical presentations of Professor Loeffler, which gave those present an opportunity to see a series of differential diagnotic problems. In his presidential address, Professor Rossier spoke on mycosis. The reports of the Society for Internal Medicine were devoted to obesity, a significant pathological condition. We can find proof of this fact in the statistics of the great life insurance societies; the mortality rate of persons who are 25% overweight is increased 74% over the rate for persons of normal weight. The complications of obesity are cardiovascular disease, hypertension, diabetes, and biliary stones. Professor Grosse (Bonn) stated that he could not discover any metabolic mechanism that differentiates the obese from the normal person. The metabolism of the obese is often higher than normal. There is rather a disproportion between the intake and output of energy. The obese person eats too much; his appetite is greater than his real need for food. Professor Bleuler (Zurich) shows that many mentally ill persons are obese. In the psychogenesis of obesity, mechanisms of compensation seem to play a primary role. It is these mechanisms that can make a mother stuff her child with food in order to give herself the assurance of a deep fondness for him, fondness that she really does not feel. Psychotherapy offers some hope in cases of obesity but has not given many practical results up to now. Dr. Demole (Geneva) said he thought that an endogenous obesity does exist in one-third of the cases; that is to say, there are persons who grow fatter even if they eat very little and are normally active. The treatment of such patients is difficult. Professor Gigon (Basle) stated: "Make your obese patient thin, and you will have a 'thin obese' person, but not an obese person who has been cured."

Toxoplasmosis.—Dr. Bamatter (Geneva) made a report on toxoplasmosis, with striking illustrations. He was one of the first to recognize the importance of this disease in Switzerland. Dr. Wirth (Geneva) discussed investigations on ornithosis and showed how these could open up new methods for the study of more serious diseases. Professor Mollaret (Paris) discussed "cat scratch" disease. A series of consecutive biopsy specimens showed how the intial lesion leads, by necrosis and secondary reactions, to pictures that imitate, according to the stage of evolution, benign lymphogranulomatosis, syphilitic gumma, tularemia, and Hodgkin's disease. Clinically, we see a small pustule followed by lymphadenopathy, which usually heals spontaneously. These three reports allowed the audience to have a comprehensive view of three new diseases caused by either protozoa or viruses.

New Method of Anesthesia.—Professor Jentber (Geneva), who held a university surgical clinic, chose as the main subject the problems of potentiated anesthesia. On the basis of his observation that it is difficult to anesthetize persons with a high metabolic rate (hyperthyroid patients and children), Dr. Laborit, Navy physician in Paris, suggested that any reduction of basal metabolism will facilitate narcosis. He also observed that substances that block the vegetative nervous system not only help to prevent shock but also increase the power of action of the general anesthetics. These substances have no actual anesthetic action but help to place the patient in a state similar to that of hibernating animals, so that anesthesia can be obtained with very small doses of anesthetic. Sometimes an "anesthesia without narcotic" can be obtained. Among substances that produce this is one of the phenothiazine series (4560 RP), which has a polyvalent action: it is at the same time ganglioplegic, sympathicolytic, and parasympathicolytic, with a predominant central action. Laborit thought he could reduce the basal metabolism even more if he produced complete refrigeration. The mechanisms of defense against cold are inhibited by the above-mentioned pharmacodynamic agents. The physician must inject these substances about two hours before the operation, in order to obtain a state of progressive, artificial hibernation. Many patients have already been operated on under these new conditions, with results suggesting that operative shock will thus become an easily avoidable complication. In military medicine, artificial hibernation seems to be the only method that may make possible mass evacuation of injured soldiers; this can be done simply and with a minimum of losses. Indeed, tranfusion seems impracticable on such an important scale.

Hibernation.—Professor Jentzer studied the metabolic and endocrine bases of hibernation. He said that postoperative hyperglycemia and modifications of cholinesterase level were very slight under the action of artificial hibernation. Dr. Greppin, head of the medical section of the health service of the Swiss Army, described research on a general toxin, called "tabun," of the group of alkylphosphates or nerve toxins. He proved experimentally that it is possible to keep alive and without any pathological symptoms all animals intoxicated with this substance by administering a mixture of *p*-aminobenzoic ester, atropine, and a benzylic ester subcutaneously. These substances, by virtue of their parasympathicolytic, curarizing, spasmolytic, and anticholinergic action, protect the organism against dangerous excitation. These experiments, which supplement the studies of Laborit, show the importance of these concepts for military medicine.

CORRESPONDENCE

HEALTH INSURANCE PLAN OF GREATER NEW YORK

To the Editor:—Dr. George Baehr, in his letter to the editor that appeared in the Dec. 6, 1952, issue of THE JOURNAL, takes exception to my article in the Oct. 25, 1952, issue, on the ground that it contained many errors. As a matter of fact, Dr. Baehr's refutation is subject to criticism, because, to me, it seems to be replete with errors and half-truths, and avoids the basic issues raised in my article; therefore, it requires response.

Since Dr. Baehr is director and a salaried employee of HIP, an enthusiastic defense of the plan by him was to be expected. However, without citing a single misstatement in my article, he has attempted to discredit me as a witness by repeated evasive and misleading statements. This is merely the continuation of an unfortunate practice. For example, to refer to quotations to newspapers, Dr. Baehr "accuses the medical profession, today, of blocking wider public participation in group health plans by 'obstructive behavior' and 'harassments'" (*New York Herald Tribune* and *New York Times,* Oct. 8, 1952). He has said that the opposition to HIP "is economics—not concern for the public health and welfare" (*New York Times,* Feb. 4, 1952).

Dr. Baehr says that I am without any personal experience with HIP. This is simply not true. As a member of the Commitia Minora of the Medical Society of the County of New York for many years and later as president-elect and president, I learned a great deal about HIP from many sources. I interviewed many physicians who were active in HIP or who had resigned and many HIP patients. Dr. Baehr took me on a personal tour of HIP, and his associate and statistician described some of the work of HIP to me.

Dr. Baehr objects to the phrase "sweatshop medical personnel," as applied to HIP physicians, because it is injurious to their reputation and a reflection on their skill. Yet, it was obvious that I was critical, not of the HIP physicians but of the conditions under which they often must work. Dr. Baehr has not denied these conditions and is unable to refute the fact that physicians are being exploited in many groups. Many are paid fixed salaries regardless of their patient load. Fees are divided among the physicians as the directors of the groups see fit, and payments are often grossly incommensurate with the services rendered. It should be pointed out in this connection that the financial set-up of the group is not under the authority of the HIP Control Board. This type of exploitation of physicians by physicians is not conducive to services of high quality. Dr. Baehr goes on to state that HIP groups are autonomous and competitive. This is not quite accurate, for there appears to be an understanding that no competitive HIP group be established in a geographical area until the subscriber lists of the original group are filled.

Let us now consider the question of subscriber satisfaction and termination rates. Dr. Baehr states that the termination rate of HIP averages about 8% per year. If this figure is accepted at face value, it is still misleading in that it utterly disregards HIP's captive subscriber group, the civil service employee of the city of New York, which comprises the vast majority of its subscribers. This group has every incentive not to terminate, in spite of its high disaffection rate with HIP. Since the city pays half its employees' premiums for health and hospitalization insurance only if they choose to obtain their health insurance from HIP, there is an obvious financial inducement for these persons to continue with their HIP insurance even if dissatisfied. Many of these subscribers maintain HIP insurance only to secure the benefit of half-premiums toward Blue Cross hospitalization. A fair proportion of the patients seek and pay for their medical care privately and use their HIP coverage for routine injections and examinations, roentgenograms, and the like.

At a hearing before the Council of the City of New York, which was held on a petition to the city to allow its employees free choice of medical insurance plan (including HIP), Dr. Baehr stated publicly (*New York Med.* **8**:24 [Oct. 5] 1952) that, if civil service employees were allowed free choice of insurance plan, HIP would be forced to close its doors. In this instance Dr. Baehr did not favor the free competition of which he professes to be such an ardent advocate. This accords rather poorly with Dr. Baehr's claim for subscriber satisfaction with HIP.

Dr. Baehr states that my charge that subscribers of HIP do not have a free choice of physician is not valid since they exercise free choice when they join the plan and are at liberty to resign whenever they wish. He means only that they have free choice to join HIP or not to join HIP. It does not even mean, in the case of city employees, that they have free choice of any other voluntary health insurance plan, as they would then lose the contribution of 50% made by the city. Once the subscriber has exercised this so-called free choice of plan, his free choice of physician is limited, for all practical intents and purposes, to the small number of physicians within the group he selects. In most areas, there is only one group that can geographically provide the medical service, and, furthermore, within the group there is usually only one physician in a number of specialties to select.

Dr. Baehr states that the general practitioners in each group have every incentive to render prompt and unhurried medical care. He attempts to create the impression that they are all full-time employees of HIP. This is apparently based on the assumption that they have an adequate income from the group and can therefore devote all their attention to HIP patients. This is not the case, for most physicians in HIP, including Dr. Baehr, do not devote their entire time to HIP. The average HIP physician also conducts private practice to supplement his income. Since his income from HIP is more or less fixed, it follows that the less time he devotes to HIP, and the more to private practice, the higher his total income will be. Furthermore, since the income of each group depends entirely on its subscriber lists and since the group is paid a capitation fee regardless of services rendered, the less service each group renders its subscribers the more the physicians of the group are paid per unit of time or per procedure. These facts make it difficult to agree with Dr. Baehr when he says that the HIP physician has every incentive to render prompt and unhurried medical care.

Without debating the issue, Dr. Baehr objects to the term subsidy in connection with HIP's discriminatory and monopolistic contract with the city of New York. He likens the city to any other employer who contracts for health insurance for his employees, but he entirely overlooks the fact that, when this is done in industry, the employees are invariably consulted as to what type of insurance plan they prefer. This was not done with the city's employees. HIP was organized in conjunction with elected city officials, and the city pledged 50% of the premiums before HIP began to function. This fact, plus Dr. Baehr's public statement that HIP is dependent on the unwilling subscribers provided by New York City for its very existence, makes the term subsidy very apt.

The final important consideration is the ethical aspect of the advertising done by HIP. It may be accepted as a basic premise that it is entirely legal and ethical for an insurance company to advertise. Blue Shield and Group Health Insurance advertise on this basis. HIP advertising, however, exhibits an important difference. Since HIP benefits are entirely in the form of medical service and no cash benefits are paid, it becomes obvious that this insurance company (HIP) is advertising for the benefit of its component medical groups. There are many other medical groups practicing in the city of New York that are expressly prohibited from advertising by the ethical codes imposed by the medical societies. Individual practitioners are similarly restricted. The unfairness of forcing these groups to compete for patients under these handicaps is manifest.

In this regard, HIP has exhibited a unique duality of personality. When the question of advertising and ethics is raised, HIP promptly assumes the role of an insurance company that is not bound by these considerations. On the other hand, when HIP chooses to boast publicly of the medical care it renders,

or to take part in medical society affairs, it embraces the role of an organization comprised of medical groups. In this fashion it enjoys the privileges accorded by medical societies while claiming immunity from the ethical restrictions normally imposed.

It would be a mistake to consider the ethical questions raised by HIP settled by the facts offered by Dr. Baehr. Ethical codes have been promulgated by medical societies not to harass groups or individuals, not to restrict competition, but to protect the public from exploitation on the basis of unfounded claims, publicly made. In the public interest it is desirable that these ethics continue to be enforced. It should be obvious to all, however, that if they are not applied universally, they will soon become unenforceable and obsolete.

In closing his letter, Dr. Baehr states that those who have opposed HIP "were endeavoring to retard the evolutionary changes in medical practice." Cannot Dr. Baehr see that it is we who wish to proceed by evolutionary methods, and he by revolutionary? Voluntary prepaid health plans that permit free choice of physician are making phenomenal strides and should be encouraged to develop further. A comprehensive insurance plan has worked since 1939 in Windsor, Ontario, Canada. It is the Windsor Medical Services, a voluntary, nonprofit, prepaid medical care plan, sponsored by the Essex County Medical Society. Over 95% of physicians in the county society participate and are paid on a fixed schedule of fees.

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MEDICAL EDUCATION ABROAD

To the Editor:—The articles concerning the education of American students in foreign medical schools appearing in The Journal of Sept. 13, 1952, page 125, should be of special interest to several groups of your readers, especially foreign medical educators and students studying medicine abroad. Dr. Manlove's article "American Students in Foreign Medical Schools" (*J. A. M. A.* **150**:70 [Sept. 13] 1952) is also important.

It is absurd, but some believe that the admission of American students to the best foreign medical schools and the acceptance of some of these schools on the "Foreign List" ipso facto make it possible for all prospective American medical students to profitably pursue their studies abroad. One of the basic reasons for this is that many of the men rejected by American medical schools were not refused without cause, although, as we all know, some excellent students are not accepted in American medical schools simply because there is not enough room for them.

Many students considering study abroad consult their doctor friends concerning the advisability of foreign study and the choice of a particular school. Too often this results in "the blind leading the blind." The person so consulted might consider the following points: 1. Why was the prospective student not accepted in an American school? Is it quite certain that the reasons for the applicant's rejection in America are not just as applicable, only perhaps more so, in a foreign medical school? 2. Does the student know what he is getting into? It was, for instance, a shock for some of the Americans coming here to commence their studies in medicine to discover that, for them, it will be more difficult here than in the States because the academic standards here are roughly equivalent to those of the best schools in America. Furthermore, they must study in a foreign language. Unless a man either knows or quickly learns the language of his courses it is a waste of time and money for him to come over. It must be remembered too that foreign schools are established and maintained to meet the needs of the various countries, not the needs of Americans. The "weeding out process," as Dr. Manlove suggests, takes place in many European schools after the student is admitted and not, as in America, before. The realization that such large percentages of men fail is an added worry to the American, who feels that he has had a sufficiency of "weeding out" in America with all the tension that accompanies it. He is also understandably impatient "to get into medicine" and is disappointed to find so much of his time devoted to material covered in America, in some cases, at the college level. The answer is, of course, that the student has chosen to study in a foreign school and that his first responsibility is to meet the requirements of his school. He may, therefore, find himself taking much more complete courses in embryology and histology than those given in some American medical schools. In a sense, the graduate of the American university is "put back" here to his sophomore year in college, because it is in the second university year in Belgium, for example, that the study of anatomy, histology, embryology, and biochemistry is begun. 3. Is the student sufficiently mature to succeed under the European system, in which there is no pressure of any sort put on the student to insure that he keeps abreast of his studies? He may have examinations only at the end of the school year, and unless he has studied continuously he stands an excellent chance of failing. It is to be assumed that the mature student will find out how long his course of studies will take, what the approximate costs will be, when the school year starts and ends with particular reference to the effect of these dates on his ability to earn money, whether the school of his choice is acceptable to the state in which he hopes to practice, and how, in all these respects, it compares with other foreign medical schools.

Foreign medical educators perhaps too might be a little more realistic in admitting Americans. To accept an American student with a poor academic record into a top-notch European medical school is to do neither him nor anyone else a favor. If a student would not be expected to do well in an American school how can he be expected to do the same job better in a foreign language? It must be admitted that the foreign medical educators have had their share of problems, and not the least of these has been the interpretation of scholastic records from American applicants. They might do well to insist that all such records bear the official seal of the institution from which they come. Such records should bear an interpretation of the grades given, and an appraisal from the premedical faculty or dean should be required. The cultural officer of the nearest American Embassy might be very helpful with these problems. It is taken for granted that such educators are aware that competent advice on these matters is available from the A. M. A. for the asking.

American students now studying medicine abroad can help their compatriots coming over and at the same time contribute something to the educational life of their own institutions. Here at the Catholic University of Louvain we have formed an organization consisting of Belgian and American students as well as students of other nationalities. Most but not all of our members are medical students. We carry on an extensive correspondence with prospective American students before they get here. After their arrival quarters are found for the students with the assistance of the usual university facilities. Review sessions in the more difficult courses are held in the language of the course, and all student members are welcome to participate for a moderate fee. Americans are urged to master the language problem before they get here, and definite suggestions are made as to how this might best be done. They are informed that other organizations give free language lessons. In some cases Americans have traded English for Flemish or French lessons. An informal but very successful supper was held earlier this year at which the new Americans had an opportunity to meet the non-American members of our organization and to talk frankly with some of the faculty members concerning the educational problems that face them.

It is part of our basic philosophy that we as an organization must do more than just accept the benefits of an excellent education. We are optimistic enough to hope that we may contribute a little something, however small, to the spirit, if not to the substance, of medical education here at Louvain. American students in other universities might well consider setting up similar organizations adaptable to their special circumstances. Certainly they should consider the library and medical film services of their local United States Information service office. Here the U. S. I. S. makes available to us excellent medical movies that are shown regularly to about 400 students. Our members have been encouraged to become members of the U. S. I. S. library. Your columns recently carried a communication from an American doctor who offered to send his medical journals to interested European doctors at his own expense. Such a gesture is certainly to be commended, but I wonder how many European doctors know that in their local U. S. I. S.

library are many of the latest American medical journals and that they may be borrowed, in the case of Brussels, through the mails without charge. In Belgium, the U. S. I. S. has cooperated to the extent of preparing mimeographed lists of all its medical books (some of which are excellent) and of all their medical journals. We are distributing the mimeographed list to our members, and it is available from the Brussels U. S. I. S. to any interested person. American medical students abroad could also, as we do here, welcome visits from all American doctors and especially from American medical educators.

While the medical educational facilities of the U. S. I. S. are available to anyone who seeks them, it is, I feel, up to the American student studying abroad to see that they are used to best advantage. The American student should also realize that he is a representative of America and that as he is judged so will his country and the things it stands for be judged. Under any circumstances this would be a heavy responsibility, but in the case of those Americans who are temporarily excused from military service so that they may study medicine abroad, there is an even deeper obligation to study and live in accordance with the principles for which many of their fellow countrymen are now engaged in combat.

PHILIP G. NELSON, Resident Director
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27 rue Notre Dame, Louvain, Belgium.

COMMITTEE ON LYE LEGISLATION

To the Editor:—Congratulations are due to the Committee on Lye Legislation and especially to its chairman, Dr. Chevalier Jackson. The children, parents, and physicians of the United States owe a particular debt of gratitude to Dr. Jackson, who practically alone was responsible for the enactment of the Model Federal Caustic Poison Law 25 years ago. However, this is not the time for the Committee on Lye Legislation to become extinct. True, much has been accomplished, yet the millennium has not been reached. Too many children are still ingesting lye that has been bought over the counter at the neighborhood store. In the state of North Carolina alone, there are approximately 150 cases of lye poisoning each year. This figure was obtained from the larger general hospitals of the state. If smaller hospitals had been contacted the figure would surely be much higher.

The Committee on Lye Legislation should continue to function and work for: (1) prohibition of the sale of lye in small containers in all grocery stores (farmers could buy it in bulk at all feed and fertilizer stores) and (2) revision of the Federal Caustic Poison Act. This act should be broadened to cover poisonous substances other than those now specified in it, including drugs. The Federal Security Administration should be empowered, after opportunity for hearing, to add new poisonous substances to the list. Provision should be made for distinctive safety containers, distinctive coloring of the article when required, and, in the case of poisonous liquids that might intrigue children, bottles with openings sufficiently constricted to make it unlikely that a child would ingest a lethal quantity.

JAY M. ARENA, M.D.
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ELI LILLY MEDICAL RESEARCH FELLOWSHIP (SOUTH AFRICA)

To the Editor:—May I, through the courtesy of your columns, draw the attention of medical practitioners registered in South Africa who may at present be in the United States to the fact that applications may now be submitted for the 1953 award of the Eli Lilly Medical Research Fellowship. The value of the fellowship is $250 a month for 12 months, plus traveling expenses to and from the point of study in the United States of America. Further details can be obtained from the undersigned. The closing date for applications is May 15, 1953.

L. EALES
P. O. Box 2980,
Cape Town, South Africa.

SIMPLE MASTECTOMY

To the Editor:—In the Special Article "The Physician and the Cancer Patient," by Samuel G. Taylor III, M.D., and Danely Slaughter, M.D., Chicago, in THE JOURNAL, Nov. 8, 1952, page 1012, there is a statement to which we would like to call your attention. We refer to a sentence on page 1014: "It would seem unnecessary to have to condemn simple mastectomy as an approach to chronic mastitis or masses in the breast, and yet this is done continually. It amounts to criminal negligence, for the reason that simple mastectomy is mutilating and unnecessary surgery for benign lesions and is totally inadequate for malignant ones."

This is not the time or place for prolonged discussion, but it is our belief that, used with judgment and discretion, simple mastectomy is a valuable procedure. The above-quoted statement is a dangerous one, and we do not believe it would be upheld by the majority of surgeons.

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WALTER D. WISE, M.D.
1120 St. Paul St., Baltimore 2.

ANESTHESIA IN OBSTETRIC PRACTICE

To the Editor:—With reference to "Repair of Obstetric Soft Tissue Damage Immediately Post Partum," by L. H. Douglass, M.D., in the Nov. 15, 1952, issue of THE JOURNAL, I wish to call attention to a major point not discussed: anesthesia. If regional, caudal, or spinal anesthesia is used, the suggested procedures should offer little additional risk to the patient. If general anesthesia is used, the picture is entirely different. A high percentage of patients will have ingested particulate matter within a short time of the induction of anesthesia. Prolonged general anesthesia is productive of a higher incidence of vomiting and slower return of swallowing and laryngeal reflexes, and the chance of aspiration is correspondingly increased. Even in the hands of the most skilled, this is a serious obstetric hazard that may cause a variety of pulmonary complications or death. I therefore suggest that if general anesthesia is used elective operative procedures be reserved for those patients who satisfy the criterion for good, safe application of the same.

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40 Beaconwood Rd.
Newton Highlands, Mass.

STERILITY OF MARKET COTTON

To the Editor:—Since writing to you on Aug. 27, 1952, concerning the article "Sterility of Market Cotton" by John H. Silliker and Eugene P. Hess, which appeared on page 1374 of the Aug. 9, 1952, issue of THE JOURNAL, we have continued with our program for examining absorbent cotton for sterility. In a nationwide survey of absorbent cotton available on the market (including samples from all of the firms with products tested by Silliker and Hess), we tested 297 individual packages, and all were sterile. We shall, of course, continue with our planned program for testing such articles.

C. W. CRAWFORD
Commissioner of Food and Drugs
Food and Drug Administration
Washington 25, D. C.

LOUIS T. WRIGHT

To the Editor:—I am gathering material for a biography of the late Dr. Louis T. Wright, for many years chief surgeon at the Harlem Hospital, New York City, and chairman of the board of directors of the National Association for the Advancement of Colored People, and I should appreciate having any correspondence, papers, or anecdotes about Dr. Wright that your readers may be able to send me.

ROBERT M. CUNNINGHAM JR.
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COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

REPORT OF THE ADVISORY COMMITTEE ON INTERNSHIPS TO THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

I. PREFACE

Many searching and fundamental questions have been raised in recent years concerning the place of the internship in modern medical education. In seeking answers to these questions, the Council on Medical Education and Hospitals decided that it should have the advice of a group of experts drawn from the major fields directly concerned with internship education. Accordingly, in June, 1951, the Council sought and obtained from the Board of Trustees and the House of Delegates of the American Medical Association authorization to appoint an Advisory Committee on Internships. This committee, which began its work in the fall of 1951 and which met frequently until it completed its work in the fall of 1952, was composed of the following members:

Dr. S. Howard Armstrong Jr., Chicago
Professor of Medicine
University of Illinois College of Medicine

Dr. Granville A. Bennett, Chicago
Professor of Pathology
University of Illinois College of Medicine

Dr. Ulrich R. Bryner, Salt Lake City
President-Elect
American Academy of General Practice

Dr. John C. Leonard, Hartford
Director of Medical Education
Hartford Hospital

Dr. John McK. Mitchell, Philadelphia
Dean and Professor of Pediatrics
University of Pennsylvania School of Medicine

Dr. John R. Paine, Buffalo
Professor of Surgery
University of Buffalo School of Medicine

Dr. John Romano, Rochester
Professor of Psychiatry
University of Rochester School of Medicine

Dr. Anthony J. J. Rourke, New York
Executive Director, Hospital Council of Greater New York
Immediate Past President, American Hospital Association

Dr. J. Robert Willson, Philadelphia
Professor of Obstetrics and Gynecology
Temple University School of Medicine

Dr. John B. Youmans, Nashville
Dean and Professor of Medicine
Vanderbilt University School of Medicine

Dr. Victor Johnson, Rochester, Minn. (Chairman)
Director
Mayo Foundation for Medical Education and Research

Dr. Edward H. Leveroos and Dr. Donald G. Anderson, Associate Secretary and Secretary of the Council, served as staff for the committee. Dr. Walter Bierring, representing the Federation of State Medical Boards of the United States, attended the final meetings of the committee. The committee was asked to examine the internship in its broadest aspects and was empowered to determine the scope of its study and the methods to be used. The Council specifically requested the committee to study the following questions:

1. Does the internship have a valid place in modern medical education?
2. If it does, where and how should it be conducted?
3. What changes in the Council's "Essentials of an Approved Internship" should be made to insure that they adequately reflect modern concepts of internship education?
4. Is the present discrepancy between the number of internships and the number of interns creating an unhealthy situation?
5. If it is, what measures should be instituted to correct it?

It is very gratifying to report that the committee from the beginning has pursued its work with extraordinary vigor and enthusiasm bespeaking the importance of the subject of its study. All members of the committee participated actively in its studies and deliberations, and each member made a significant contribution to the outcome of the committee's work. Special note should be taken of the work of the Subcommittee on Draft of Final Report, consisting of Dr. S. Howard Armstrong Jr., Chairman, Dr. John B. Youmans, Dr. John McK. Mitchell, and Dr. E. H. Leveroos, and the Subcommittee on Revision of the "Essentials of an Approved Internship," consisting of Dr. John McK. Mitchell, Chairman, Dr. John C. Leonard, Dr. John B. Youmans, and Dr. E. H. Leveroos.

The report of the committee is a major contribution to the clarification of the present status of the internship in medical education. The sound concepts of internship education that are embodied in the revision of the Council's "Essentials of an Approved Internship" suggested by the committee should constitute a basic guide for the conduct of internships for the next decade or longer.

On behalf of the Council it is my pleasure to express deep appreciation to the members of the committee for the important work they have performed and to commend to all concerned with the internship thoughtful study of their report and active attention to its recommendations.

H. G. WEISKOTTEN, M.D., *Chairman,*
Council on Medical Education and Hospitals.

II. INTRODUCTION

In accepting the assignment given us by the Council on Medical Education and Hospitals we considered the problem before us essentially as follows:

The past quarter century has seen nationwide acceptance and application of two changes in medical education which, at the time the internship had achieved its now traditional status, were experiments localized to a few teaching centers. The first of these is the clinical clerkship, the second is the residency system. Today, both fourth year clerk and junior resident learn and act in areas traditionally the intern's province. While the clerk's and resident's roles have been under intensive and extensive study by both medical schools and specialty boards, comparable attention has not been given to the intern's role whose province has been thus invaded.

Twenty-five years ago, the place of the internship was clear. Following upon a medical school curriculum which was centered around the laboratory and amphitheater rather than the bedside, it was a big step towards assuming clinical responsibility for the individual patient. Residencies were few and far between. In their place stood advanced experience in the second year of many internships. In this second year often a man would carry out 50 or more supervised major surgical procedures or be in direct charge of a considerable group of ward and outpatients. Contrast today's intern. With the modern superstructure of residencies which has followed establishment of specialty boards, rarely can he achieve the clinical responsibility of the old fashioned "senior intern" short of three to five years within the hospital walls. Yet, if he comes from a school with modern, well-developed clinical clerkships, he enters his internship far more versed in practical matters than did his father's generation. Already he has taken many histories, done many physical and routine laboratory examinations, and presented his patients for scrutiny on teaching rounds. He is familiar with the second assistant's position at the operating table. He has probably done a thoracentesis, a spinal puncture, and other minor surgical procedures.

Thus, in this apparent squeeze between clerkship and residency, today's interns and intern candidates sometimes ask "Where are we?" It has been partly our task to inquire as to whether the squeeze is real and, if so, to redefine a valid function for the internship. For failing of valid function, the internship will probably and properly vanish. Moreover, the exigencies of

war brought many vicissitudes on the internship. Internships were originally adjusted in length to the educational and service goals of the varying programs (mixed, straight, and rotating) of the sponsoring hospitals. Following the World War II truncation of nine months, internships have emerged as one year programs in most instances. This single year has enhanced the tendency of some rotating internships to become "vibrating internships." By this term we mean the type of internship in which the young doctor is given so quick a circuit ride through a maze of specialties and subspecialties that he loses all continuity of patient observation. Moreover, exposure to individual clinical teachers is so brief that he rarely can employ their continued example in the development of his own clinical skill and understanding. Thus his work can become based in the main on precept, on procedural outlines contained in "precedent books" supplemented by formal conferences.

World War II and its consequences have also brought drastic economic changes both to hospitals and interns. Inflation no longer permits many a privately endowed hospital to support the low cost public wards and outpatients which formerly were a mainstay in teaching. The economic changes in the intern's status are no less striking. Twenty-five years ago it could be said without exception that no man worth his salt in medicine chose his hospital training by stipend or by the availability of comfortable, home-like quarters for himself (and possibly his family). Few hospitals paid intern stipends sufficient to support a wife. Today this cannot be said without many exceptions being taken. We all know that, beginning with the graduates of World War II and continuing through graduates under the "G.I. Bill" to men currently returning from military service, our hospitals have a substantial and steadily increasing proportion of married men in training. There is little question that today some capable men by reason of family responsibility feel that they cannot afford to accept a hospital appointment which is known to be excellent in education but poor in stipend. However, important as this economic factor is in selection of a training hospital, it can in overemphasis obscure certain fundamental educational issues. Other things being equal, apartments, tennis courts, and television do not replace graded clinical responsibility under first-class teaching clinicians and scientists.

Despite these and many other problems, the internship remains prominent in our educational structure. In the current year approved hospitals offer over 11,000 internships to graduates of American and acceptable foreign schools. From this figure comes another group of considerations which have focused attention on the intrinsic problems of the internship.

Today there are about 3,000 more approved internships than there are interns. Many factors indirectly contribute to this discrepancy. The growing complexity of effective medical care has increased hospitalization demand. The growth of prepaid insurance has financed this trend and has swollen the "semi-private" hospital accommodations intermediate in cost between the old fashioned public ward and the private pavilion. Intern coverage of old, often limited to public wards, has been widely extended to semi-private and private patients. In this expansion many a small hospital which met the minimum bed requirements has realized the convenience of interns and has set up a program meeting the educational standards for approval. The size of the discrepancy has given rise to nationwide implications both for education and for service. Hospitals which count on interns contributing to patient care face difficulties in the discharge of their responsibilities when their rosters are not filled. Unhealthy aspects of the resultant competition have touched medical schools, hospitals, junior and senior medical students, and interns themselves.

Medical schools are not immune to the intensity of the competition. Hospitals without affiliation have felt that the schools are in a position to favor their own hospital services without due regard to the excellent opportunities that exist outside of these centers. Moreover, some hospitals vie with each other in offering attractions at best not germane to and sometimes inconsistent with the traditional educational and service functions of the internship. Being pressed in providing adequate service, they face the strong temptation to substitute such attractions for sound educational opportunity. In this attempt, hospitals are abetted by some intern candidates who, in taking advantage of the fact that they are in a buyers' market, make demands on hospitals inconsistent with their own best educational interests, which the interns are not yet in a position to visualize. Whether or not the demands are granted, resultant attitudes can have devastating effects on morale of the interns, teachers, and hospital administrators. When an intern carries out his work in a patronizing fashion rather than in a spirit of studious service, he demeans the honored position the internship has traditionally held in the eye of the profession and the public.

From the standpoint of the individual hospital, the interns query "Where are we?" has a counterpart for the staff internship committee and administrator: "Where are they?" Thus, in seeking answer to the underlying question "How can we get an intern staff?" every hospital group faces the inseparable question "What constitutes a sound internship?" Already we have referred several times to the internship's service and educational functions, for we realize that service and education are differing aspects of the internship which are inseparable in practice. Educators, hospital administrators, students and interns alike ask themselves: Just what are these functions? It has seemed to us that some hospitals, tempted to obtain interns by attractive substitutes for educational excellence, do so because they do not have a proper understanding of the nature of this excellence.

That some hospitals understand in practice its nature is clear. We all know hospitals which year after year fill their intern rosters. When an attending staff realizes that teaching takes time worth dollars in the office, when the staff cherishes the continuously broadening viewpoint that comes from day after day of give and take with interns, the intern roster is usually overfilled, although paint may peel from the walls of the living quarters and stipends be nominal. For such a staff spirit can so illuminate bedside teaching that the interns' progress toward clinical maturity through supervised graded responsibility is assured. No tennis courts, television sets, kitchenette apartments, or printed lists of conferences can substitute for this spirit in giving an intern a feeling of function. The more famous and widely sought after municipal or county services in this country cannot always be distinguished from less popular services by ward equipment, house staff pay, or indeed by laboratory buildings. They can be distinguished by the freedom and content of communication among the little knots of men and women who serve the wards, operating rooms, autopsy rooms, and laboratories regularly, day after day. On the other hand, we are all acquainted with hospitals which, despite superb physical plants and high stipends, are not always successful in attracting an intern staff. Some of these are private hospitals, a few have large public wards.

For a hospital consisting chiefly of private beds, failure to obtain interns rarely spells service disaster. A far harder problem in service is faced in the case of a municipal hospital with large public wards and either a small attending staff or a large staff with some members comparatively indifferent to their responsibilities. In approaching these problems we have been well aware that no committee action can create some 3,000 extra graduates out of thin air to fill this gap. If indeed this many first year graduates are needed the implications go beyond the scope of this committee. Though medical schools are increasing their enrollments there is no likelihood that they can graduate 3,000 extra men a year in the near future and still maintain existing standards.

Actually, less than 15% of the country's hospitals are approved for internships. A very high level of patient care can be found in many hospitals not offering internships. Accordingly, we do not believe that thousands of additional graduates are an inevitable need. Therefore, in attacking the discrepancy between interns and internships (which we agree is unhealthily large) we adopted this approach: 1. To evaluate as exhaustively as we could the educational function of the internship. This includes both analysis of educational aims and the study of their practical embodiment in successful internship programs as well as the study of problems in programs which have been less successful. 2. To ascertain whether educational aims are consistent with the service needs of those hospitals able and willing to provide the educational opportunities. 3. To appraise the effect of a redefinition of the internship on educational grounds on the existing number of internships offered.

Thus we have hoped to develop implications useful in solving the "Where are they" problem for the hospital of high but per-

haps unrealized teaching potential. For hospitals without interns, we have examined policies which, notwithstanding this lack, seem to have made for a high grade patient care. We have gone about these tasks in the following fashion.

III. AREAS REPRESENTED BY THE ADVISORY COMMITTEE; FACT FINDING ACTIVITIES AND INTERNSHIP POOL; REVISION OF THE ESSENTIALS OF AN APPROVED INTERNSHIP; FINAL REPORT

Perhaps our first job was to appraise our own capacity to study these problems properly. The committee membership was widely distributed by geography, by educational and teaching experience, and by type of practice. Most of us have been and currently are intensively engaged in intern education, both within and without medical school auspices. In many instances this had already led us as individuals to seek information on problems of the internship beyond our own hospitals. Thus each of us brought to the initial deliberations an experience usually wider than that afforded by a single institution or type of institution.

We immediately recognized that this initial basis of shared experience needed further broadening and validation to support useful conclusions. Part of this necessary breadth we have sought through extensive consultation with colleagues in teaching, in hospital administration, and in practice. In the interest of covering the greatest ground in reasonable time we have done this as individual committee members rather than by holding elaborate committee hearings; the findings have been brought before the committee for detailed discussion at the successive meetings. Here great effort has been directed to make information obtained by consultation truly representative of the areas wherein internships are given in order to minimize biases that can be introduced by the specific experiences or specific circles of acquaintance of individual members. The administrative staff of the Council on Medical Education and Hospitals of the A. M. A. has put their collected data together with their concrete experience in the procedures in evaluation of internship programs seeking approval. Drs. Anderson and Leveroos have been invaluable both in attendance at our meetings and in facilitating the work between meetings.

Extensive as information thus available might seem, it left an area where the committee felt facts were lacking; namely the opinions and appraisals of past interns. These have been particularly necessary for our attempt to weigh the multiple criticisms familiar today in almost every hospital dining room. Thus, for example, how universal is the complaint of squeeze between clerk and resident among interns at medical school affiliated hospitals? [1] What of the oft heard "too little clinical responsibility," "too much laboratory work," "too many private patients," "too little supervision," "too many hours in the operating room at the end of a hook," as well as more general criticisms dealing with the preparation for practice? What are the factors which, in retrospect, the intern feels directed his choice toward a given hospital and away from others? For these and many other questions we had no immediate quantitative answers at hand. We recognized that though answers of recent interns themselves to some of these questions might well disagree with our own initial appraisals or our educational convictions, they would nevertheless prove essential for framing long-term recommendations of any validity.

Having reached agreement on basic considerations, we soon faced the problem: how to get these answers on a properly broad basis? Direct consultation (applicable to our colleagues and to present interns and medical students) might tend to be limited to men who work in areas of hospitals which offer internships, to the neglect of men in other geographical areas whose subsequent experience in practice might lead to different appraisals of their internships. A letter of inquiry sent to medical school deans disclosed that the considerable informal information available on appraisal of individual hospitals by recent graduates was not sufficiently organized to meet our questions.

With full realization of the pitfalls of polls and particularly those involving retrospective appraisal, the committee then set down a series of evaluation questions on the internship experience which they believed to be critical and searching. These were formulated by Drs. Anderson and Leveroos into a questionnaire, which was sent to graduates of all medical schools of the classes of 1937 and 1947. The lapses of 5 and 15 years were selected in order that the recent intern might have a background of clinical work by which to attempt appraisal of factors in his training.

In evaluating the results of this poll we had the advice of Dr. Frank Dickinson, Director of the Bureau of Medical Economic Research of the American Medical Association. This bureau took charge of the coding on IBM cards and the analysis of replies according to the information sought by the committee. The response figures, 65.2% for the class of 1937 and 50.2% for the class of 1947, were believed satisfactory for this type of poll. (The smaller number of responses of the 1947 group relates to a very large percentage of incorrect addresses: 23% for 1947 as compared to 3% for 1937. This is doubtless due to the fact that many of the 1947 class are not yet settled in practice.) The illustrative tabular material in subsequent sections of this report are derived from the data. So extensive is the available information that full publication of the study is planned for a later date.

We realized initially that at least a year would be required to achieve a reasonable combined perspective on all this material. The Council gave us indication that they set no limit of time on our work beyond that indicated by the problem. At the end of about a year the unanimity of conclusions in committee meetings was such that we set about their crystallization in a re-draft of the Essentials of an Approved Internship. A separate document, this re-draft contains detailed recommendations for which the discussion of this final report serves as background, amplification, and emphasis.[2] We recommend to the Council that these standards apply to all hospitals requesting approval of internship programs and that they be judiciously used in the periodic reevaluation of the programs of hospitals now approved. In so doing, we are aware that the rapid movement of events characteristic of our age, though without effect on the fundamental principles of sound education, may make specific recommendations for their applications valid in 1953 and invalid a few short years later. We hope the Council will continue its policy of scrutiny of existing practices in the light of both fundamental principles and the changing facilities for their realization.

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1. Very early in the discussion the committee found the traditional "teaching hospital" not suitable to its thinking. In recognizing that excellent internship experience is available in hospitals far from medical schools or urban centers, we make the traditional differentiation by the phrase "medical school affiliated" or "medical school unaffiliated," and we took our first concern to be the nature of the internship experience, independent of auspices.

2. Procedures for intern appointment are presently under evaluation by a broadly representative group backed by medical students, hospitals, medical schools, and the profession, who have set up the Matching Plan. We felt, therefore, that the detail of this evaluation is beyond our scope. We limited ourselves to the following general points.

Now going into its second year, the Matching Plan is an experimental program with the basic purpose of obviating age-old problems in intern appointment. Hospitals, in competition to fill their rosters, push the time of appointment earlier and earlier in the medical school curriculum. The student often feels forced to accept a contract before he knows enough or has had time to appraise his own clinical aspirations, the comparative educational resources of hospitals, and his actual chances for appointment at a variety of hospitals. We were unanimous in our belief (*a*) that a plan to remedy this problem is long overdue and (*b*) that any plan put into practical operation is bound to run into many areas of criticism, particularly in the first years of operation.

Success of the plan clearly is dependent on the levels of cooperation of student, medical school representatives, hospital service chiefs, and hospital administrators. The results of the first year's matching apparently indicate the criticism from the students themselves is at a minimum, for over 90% of those participating in the plan were matched according to their first or second choices. We know of few student problems in those medical schools where the operation of the plan has been adequately explained to the student body.

From the hospitals' standpoint, some of the criticisms have apparently arisen from areas where the actual operation of the Matching Plan was not generally understood and older practices of appointment, somewhat inconsistent with the Matching Plan's specifications, were carried on simultaneously. Confusion resulted for students, service chiefs, and hospital administrators.

If hospitals widely recognized for their heavy investments of equipment, staff teaching talent, and staff teaching devotion consistently fail to get interns under the Matching Plan, this will demand examination as to whether the fault lies in matching procedure or in other factors. We are not aware that problems of this sort are widespread. Examination into individual situations will take time. Thus, though modifications may become necessary as the study of the problem progresses we consider the aims for which the Matching Plan was set up to be sound.

IV. GENERAL PROBLEMS OF THE INTERNSHIP

A. *Should There Be an Internship?*—Our conclusion is yes. In reaching this conclusion we considered many alternatives. For example, this combination has been proposed as a measure toward relief of the discrepancy between internship and interns: 1. Fourth year clerkships should comprise periods of 24 hour duty in medical school affiliated hospitals, and should carry much of the service responsibility now given the intern. 2. Subsequent internships should be available only to those intending to go into general practice. 3. Students who plan to specialize should go directly from fourth year clerkship to first year residency.

TABLE 1.—*Questionnaire Item 40: Did Your Internship Provide Significantly More Advanced Experience Than That Which You Had as a Student Clinical Clerk?*

1937 Graduates

Type of Internship Taken	Yes	%	No	%	No Opinion	%	Total	%
Rotating	3,009	93.1	134	4.1	87	2.8	3,230	100
Mixed	279	94.5	12	4.2	4	1.3	295	100
Straight	299	94.0	15	4.7	4	1.3	318	100
Total	3,587	93.3	161	4.2	95	2.5	3,843	100

1947 Graduates

Type of Internship Taken	Yes	%	No	%	No Opinion	%	Total	%
Rotating	2,113	89.5	236	10.0	11	0.5	2,360	100
Mixed	129	91.1	12	8.8	1	0.1	142	100
Straight	297	93.3	18	6.6	2	0.1	317	100
Total	2,539	90.1	266	9.4	14	0.5	2,819	100

In evaluating this proposal we know that many a medical student has successfully filled temporary house staff vacancies during his clerkship or in vacations. To be chosen so to do has often been an honor. However, it does not necessarily follow from the excellent performance of selected students that all are ready to fill this role in their fourth year. Medical schools have often been wary in granting credit for substitute intern work, based on the fact that the increased self confidence that comes from being called "Doctor" and from wearing a white uniform is not always accompanied by comparable growth in the grasp of medicine at this stage.

Thus, for these proposals, the educational and practical validity of giving intern work to all fourth year students requires prior demonstration. Where this is to be done, the medical school curriculum for the fourth year will have to be on a 12 month basis; further, additional hospitals will be required to provide the affiliating services for the senior clerks. A staff with recognized ability in intern education can provide the most useful exploration of its extension into the fourth year. Even in such hospitals, we feel that medical schools must be vigilant that in any shift toward internship, the fourth year clerkship does not degenerate into an externship, in which a hospital gets routine work in return for board and lodging. This is a particular danger when hospitals loosely affiliated with a medical school seek clerks for intern duties because their educational programs are not sufficiently attractive to fill the intern rosters. The widespread assignment of these routine duties to clerks would destroy the existing high standards of clinical education in the third and fourth year which have been achieved in many schools with great effort and toward which other schools are working. Today's proper internship presumes such a clerkship. In our unanimous opinion, a subsequent intern year, properly planned, continues to have an indispensable function in the doctor's education. True, when poorly planned, the intern year can seem at the time an onerous repetition of the clerkship, but even under these circumstances, in retrospect it has often seemed to bring confidence and skill in the performance of basic medical functions. The graduates of 5 and 15 years ago confirmed our conclusions in this regard. Tables 1 and 2 show that over 90% of these classes believed that the internship had provided for them a real increase in responsibility over their medical school curriculum and had seemed an essential experience.

Today wide discrepancies still exist both in clinical responsibility and in the intensity of bedside teaching among the clerkships in our schools. Year-round clerkships with round the clock patient responsibility are few and far between. Whereas we are interested in the results achieved by such experimental programs, we feel that they are as yet insufficiently developed to serve as a base for recommendations of nationwide scope. The poll confirmed our thought in these matters. At intervals of 5 and 15 years respectively, over 90% of the 1937 and 1947 graduates indicated that the internship provided a real increase in clinical responsibility and, in retrospect seemed an essential experience, as indicated in tables 1 and 2.

B. *How Long Should the Internship Be?*—In giving our conclusion, one year, we immediately run into potential confusion based on terminology. This stems in part from the effect on the connotation of the word intern by specialty board regulations governing residency training programs. Today's junior assistant resident rarely has more responsibility than the intern had at the end of the 18 to 24 month services prevalent before World War II. Usually he has less despite the more advanced title. So, when we say the internship is essential, we are by definition discussing the first year of a minimum two years' training.

We do not consider wise any national policy which takes men into the medical branches of the armed services after a single year of hospital training. In our unanimous opinion, a minimum of two years of supervised hospital experience is necessary for the practice of medicine in any form, as a civilian or in the armed forces. This supervised experience can be in either civilian or military hospitals. Short of dire emergency, the curtailment of postmedical school training to a single year inevitably lowers standards of care in the country as a whole.

For those who plan specialization, the remaining years are specified by board requirements. For those who plan general practice, there exists a broad field for which hospitals may provide individualized second year programs. Such hospitals often may be unable to offer first year internship programs. Hospitals which can offer the second year but not the first are the subject of a subsequent section. Individualization here is essential for proper training, for the work of a general practitioner varies widely in scope over the country.

C. *What Type of Internship Is Optimal?*—The unanimity of our preference for a rotating internship surprised even ourselves, for we numbered men who both interned in and later became staff members at university hospitals with straight services. As one of these said: "I would gladly have taken a rotating internship if the hospital in which I wanted to work had offered one." By rotating internship we mean one so planned as to provide: (1) continuity of observation of individual patients, (2) continuity of exposure to individual clinicians selected for their devotion to teaching, and (3) clinical responsibilities graduated according to the increasing experience of the intern. We do not mean the quick circuit riding internship widely prevalent in previous decades and still existent in some hospitals. In the latter appointment the intern carries out the same routine of histories, physical examinations, laboratory work, and simple therapeutic procedures on a new service every month or so; on each successive service he is responsible to 8 or 10 attending men; the successive chiefs barely get time to learn the intern's name.

TABLE 2.—*Questionnaire Item 42: Do You Believe the Internship Is Still Essential in Medical Education?*

1937 Graduates

Type of Internship Taken	Yes	%	No	%	No Opinion	%	Not Rated	%	Total	%
Rotating	3,171	98.2	28	0.8	5	0.2	26	0.8	3,230	100
Mixed	282	95.6	3	1.0	3	1.0	7	2.4	295	100
Straight	310	97.6	1	0.3	1	0.3	6	1.8	318	100
Total	3,763	98.2	32	0.6	9	0.2	39	1.0	3,843	100

1947 Graduates

Type of Internship Taken	Yes	%	No	%	No Opinion	%	Not Rated	%	Total	%
Rotating	2,296	97.2	35	1.5	9	0.4	20	0.9	2,360	100
Mixed	140	98.4	1	0.7	1	0.7	..	0.0	142	100
Straight	313	98.6	0	0.0	2	0.6	2	0.6	317	100
Total	2,749	97.5	36	1.3	12	0.4	22	0.8	2,819	100

In a few states such internships are perpetuated by rigidity of licensing board requirements. We hope that the time is at hand when state authorities will modify these requirements in keeping with a soundly planned rotation. On the surface it might seem that a rotating internship that provides both continuity of patient observation, continuity of contact with attending men, and graded clinical responsibility might be impossible to achieve

TABLE 3.—*Questionnaire Item 29: What Type of Internship Would You Have Taken (If You Had Complete Freedom of Choice)?*

1937 Graduates
Type of Internship Preferred

Type of Internship Taken	Rotating	%	Mixed	%	Straight	%	Total	%
Rotating	1,672	91.6	99	5.4	54	3.0	1,825	100
Mixed	72	55.8	41	31.8	16	12.4	129	100
Straight	87	43.1	24	11.8	91	45.1	202	100
Not checked	1,399	....	131	....	157	....	1,687	...
Total	3,230	....	295	....	318	....	3,843	...

1947 Graduates
Type of Internship Preferred

Type of Internship Taken	Rotating	%	Mixed	%	Straight	%	Total	%
Rotating	1,424	93.5	48	3.2	51	3.3	1,523	100
Mixed	53	44.8	33	27.9	32	27.3	118	100
Straight	75	36.0	8	4.0	125	60.0	208	100
Not checked	808	....	53	....	109	....	970	...
Total	2,360	....	142	....	317	....	2,819	...

in any existing hospital setting. We do not believe this to be so. But we have not set down strict rules for the achievement of these ends because the methods will vary greatly according to the location. We do realize that to provide this type of intern experience, certain areas in many hospitals now covered by interns passing through in rapid rotation will have to be removed from intern coverage and services provided in a fashion described subsequently in this report. We do believe that the effort a hospital makes in orienting its internship program in the light of these three principles will enormously strengthen its educational attraction for prospective interns and will restore in many areas the internship to its proper status as an educational year.

In recommending a soundly planned rotating internship we recognized that comparable breadth can be achieved with greater thoroughness by a series of straight internships (or equivalent junior residencies) in several major specialties. We also realized that practical considerations bar such a course for most men, whether they plan general practice or specialization. For fourth year students, who are frequently undecided on specialization or who plan general practice, the advantages of rotating service are obvious. For the future specialist the advantage is not always initially apparent. The limitations of a straight internship should be noted. Few straight medical services give much experience with acute surgical abdominal emergencies with the everyday sequence of preoperative and postoperative care. Many a man has graduated from a straight surgical service with little first-hand familiarity with cardiac failure, diabetic acidosis, or even with the diagnostic and therapeutic resources in some subspecialties in his own field, e. g., urology and otolaryngology. Proper use of consultants in specialized practice demands acquaintance with what they can do. There is no doubt that capable men trained on straight services pick this up as they go along, but many later feel their initial deficiency.

The committee recognized the many advantages inherent in the existing minority of straight and mixed services for those whose mind is thoroughly made up on a specialized or academic career. We do not disapprove of these services, provided the total hospital training includes a well-rounded experience. We suspect that particularly in university hospitals, straight services are often retained because of the attitude of the chiefs who consider relatively short-term rotating internships more of a nuisance than an asset and who further wish more prolonged contact with their men in order to forge a strong intradepartmental chain of command. Some chiefs are far more concerned with the efficient conduct of their own service than with the value of the internship as a preparation for the practice of medicine, thus setting aside entirely the needs of those interns planning to enter general practice.

The classes of 1937 and 1947 confirmed us in an overwhelming preference for a rotating service. Indeed, almost half of the men who took a straight service indicated that they would take a rotating service if they had an opportunity to retrace their steps (table 3).

V. HOW SERVICE STRUCTURE AFFECTS THE VALUE OF THE INTERNSHIP

A. *Simultaneous Clerkship and Residency Programs.*—We feel that clerks and residents, with duties appropriately assigned, add rather than detract from the internship's value. This advantage depends on graded responsibility throughout the service as a whole of such nature that the intern does not function simply as an additional clinical clerk or that the resident does not function as an additional intern. Clerks give the intern an opportunity to teach. In so doing he must make his concepts and actions stand up under the examination of men only slightly his junior.

The resident, in turn, is often a far more available (if less experienced) counselor to the intern than are many of the attending staff. The resident may be closer to the existing medical theory of his day. He is close enough to his own internship to have vivid appreciation of the men who first guided him through a venipuncture and later a chest tap, who took time to listen together to a heart until agreement was reached on the noises and their significance and who later guided him through diagnosis and treatment of a patient desperately ill from an obscure malady. This resident, in his turn, hands on these daily arts to the subordinates on his own service. He applies to their histories, physical and laboratory examinations, and diagnoses and therapy, the standards that were applied to his own a year or so before. We do not mean that these teaching activities of the resident can substitute for teaching by the attending staff. There is no substitute for devoted teaching by the staff, and indeed, proper teaching by the residents can only be achieved in an atmosphere set by the attending staff.

Though the complaint of intern squeeze by the resident or the clerk is sometimes loud and more rarely valid, the classes of

TABLE 4.—*Questionnaire Item 41: How Would You Rate Your First Internship in Terms of Its Educational Value to You?*

1937 Graduates
Rating of Internship

Type of Program	Excellent	%	Good	%	Fair	%	Poor	%	Total	%
Clerkships only	95	59.7	47	29.8	14	8.8	3	1.7	159	100.0
Residencies only	673	51.7	470	36.3	129	10.0	25	2.0	1,297	100.0
Clerkships and residencies	940	71.6	307	23.4	53	4.1	10	0.9	1,310	100.0
Neither type of program	400	38.9	417	40.6	170	16.5	40	4.0	1,027	100.0
Not reported	33	61.1	16	29.9	3	5.0	2	4.0	54	100.0
Total	2,141	55.9	1,257	32.6	369	9.5	80	2.0	3,847*	100.0

1947 Graduates
Rating of Internship

Type of Program	Excellent	%	Good	%	Fair	%	Poor	%	Total	%
Clerkships only	4	21.0	9	47.5	4	21.0	2	10.5	19	100.0
Residencies only	456	40.7	517	46.2	125	11.1	22	2.0	1,120	100.0
Clerkships and residencies	893	58.3	513	33.5	111	7.2	14	1.0	1,531	100.0
Neither type of program	36	29.5	57	46.7	24	20.0	5	3.8	122	100.0
Not reported	10	45.4	9	40.9	2	9.0	1	4.7	22	100.0
Total	1,399	49.8	1,105	39.2	266	9.4	44	1.6	2,814†	100.0

* Excludes 36 replies in which rating was not checked.
† Excludes 5 replies in which rating was not checked.

1937 and 1947 confirmed our belief that it is not frequent enough or serious enough to require recommendations for policy change. Hospitals with both clerkship and residency programs received distinctly higher internship value ratings than hospitals with only one program or neither (table 4). Of course, hospitals with both clerkships and residencies are usually university affiliated and thus have clear emphasis on teaching. Even in these hospitals, interns often note a letdown in the teaching activities and in

general interest of the staff and an increase in chores during vacations and during the summer when clerks are absent.

B. *Intern-Patient Ratios.*—Here we can set down only desirable upper and lower limits. An intern should not care for more than 25 and rarely for less than 15 hospitalized patients. To find an optimum between these limits is a matter for each individual hospital service to determine.

The availability of clerks and residents and a long average patient stay increase the number of inpatients an intern can properly care for. Many other calls on his time (operating room, outpatient duties), predominance of very ill or postoperative patients, and a rapid bed turnover all diminish the number. Though the optimum is an individual matter, the following principles seem to us of general applicability. The intern must have time to do thorough work. He should not carry such a load that he learns to cut corners before he learns what corners he is cutting. On the other hand, he should have a sufficient number of patients, well distributed over the spectrum of clinical disease, so that he can see a representative sample of the situations he is likely to encounter later in practice.

C. *Distribution of Inpatient Population.*—The last principle seems so obvious that only in its occasional abuse is it worthy of comment. Some doctors use private hospital beds for inpatient diagnostic services which amount to supervised hotel facilities for outpatients. Some university services select patients by the rarity, the difficulty, or the research interest of their condition. Neither type of admission policy fulfills a hospital's responsibility to its interns. A few "three-day work-ups" or "industrial check-ups" do not compromise the value of a service, a predominance of them ruin it. For proper inpatient experience, there must be firsthand work with the very sick. It is no substitute for outpatient experience, whose essentiality we discuss later. By the same token, outpatient experience with incipient or nonincapacitating illness is no substitute for inpatient work and is only meaningful in the light of it.

Another problem in patient distribution arises when a hospital has services of a size relatively disproportionate to its intern rotation plan. Thus, for example, a general hospital with a total of some 500 beds may have by reason of local circumstances, a pediatric service of but 40 beds. When such a hospital provides pediatric experience for each of 25 or 30 interns, the resulting patient load is far too light for the period involved (less than 10 beds per intern). Such deficiencies have been successfully and properly solved by affiliated services when the hospital itself cannot rectify the situation within its own walls.

D. *Private Patients.*—Today's widespread hospital insurance has all but broken down the old distinction between pavilion and public ward patients in teaching centers which used to assign the latter to the house staff, the former to a special residency staff. Private patients have become and will remain an integral part of intern educational programs. In our opinion, from the internship standpoint it makes no difference whatever whether the patients are in rooms with baths or in 20-bed wards; or how the hospital or the doctor's bills are paid if all of the following provisos are met:

1. That the patients on private services are as sick and present the same range of disease as those on public wards and that comparable opportunity for follow-up exists.

2. That the attending staff value breadth of viewpoint that comes from time spent in teaching and do not treat teaching as an unwelcome burden inherent in staff privileges.

3. That the teaching attending staff are sufficiently secure in the private doctor-patient relationship to permit house staff responsibility comparable to public wards and understand in practice the distinction between indoctrination and true learning.

4. That the same critical standards of diagnosis and treatment apply on private and public ward patients.

The revised Essentials of an Approved Internship contains the specific requirement of equal availability of private and public ward patients for teaching. In sum, when there exist beds on which private staff doctors do not wish to carry out the same level of teaching they would on public ward patients, those beds should not have interns assigned to them and should not count in the total beds required for approval by the Council. They are of as little use in intern education as are beds used for long term research problems on a handful of patients.

At the end of hospital training when a very real degree of skill and experience has been achieved and the senior resident is ready to run his own group of patients, private patients cannot quite provide the educational opportunity of the public ward. For on the public ward the resident assumes responsibility for which a private patient pays his doctor. At the intern level, comparable responsibility is not involved and the consequent problems do not arise. There are, however, a few problems in teaching exercises intrinsic to a private service which can be readily solved by an interested staff. These we will discuss later.

E. *Subspecialties in Service Organization.*—The Essentials of an Approved Internship has been and, in its new revision, is very specific on the minimum length of time an intern should spend on a service. For on the quick circuit ride of the old "vibrating" internship, the intern passes from service to service with such rapidity that he receives merely a kaleidoscopic impression of patients as vehicles for "clinical entities."

Continuity of patient care is just as essential at the intern stage of training as it is in the undergraduate clerkship or in medical practice itself. Only thus can the intern begin to achieve concepts of disease in terms of time sequences of pathological phenomena related to physiology, biochemistry, histochemistry, psychodynamics, etc., rather than in terms of constellations of symptoms, signs, laboratory findings, and behavior characteristics, artificially frozen in time by the accident of discontinuity in study.

Extensive subspecialization of the major clinical departments on the intern level can destroy continuity as effectively as the older single month services; *vide* the man who spends his three months in medicine as follows: three weeks on the "cardiology service," three weeks on the "gastrointestinal service," three weeks on the "hematology service," three weeks on the "infectious service." This is just as much a vibrating internship as three weeks on "nose and throat," three weeks on "eye," and three weeks on "skin."

We do not feel that hospitals which for convenience of practice are thus subspecialized should offer internships unless they are willing to arrange general departmental services at the intern level with subspecialization at the residency level only. The latter arrangement has proved very satisfactory in several institutions. Each subspecialty group can then hold its own teaching rounds once a week, and thus make its individual contribution, not only to its own patients but in a consulting fashion to other patients under the intern's care. The intern will get to know the range of subspecialty work without loss of service continuity. We believe that the chiefs of the major services, medicine, surgery, pediatrics, and obstetrics, should make opportunity for and indeed demand the representation of subspecialties in the interns daily ward work and his teaching exercises.

Some specialists today feel that a rotating internship well planned for continuity of patient and teacher contact "cuts them out"; that it fails to give them opportunity to become acquainted with the young men and show them the possibilities of specific specialized fields. They would have the rotation include periods devoted to their specialties alone. Such, for example, is often the case among otolaryngologists, for whom the development of chemotherapy and antibiotics has changed the scope of practice and who express concern about paucity of candidates for their residencies. It is our feeling that their desired educational approach to interns can be achieved through lively clinical conferences and the proper use of consultations far better than by rapid rotation of assignments.

If an intern attends his consultants as they make their examinations, if he learns his gynecology from the medical patients with gynecological complications, and the otolaryngology from the surgical, medical and pediatric patients who develop problems relative to the nose and throat, he often has a better background (particularly if supplemented with outpatient experience) than the man who has been rapidly rotated through two week to one month separate assignments.

F. *Time Off.*—The hospital's responsibility for continuity of patient observation ends in providing the opportunity. The observation itself is done by the intern. Therefore, we have not included in the revised Essentials of the Approved Internship any specific recommendations as to vacations or time off. This does not mean that we disapprove of time off or of vacations. Rather we feel that each hospital should provide some schedule

according to the needs of its house staff and of its services. There is no question that some scheduling makes an internship far more attractive to a man with a family. We see no intrinsic value whatever in the recently passed era when in certain hospitals an intern was lucky to get out every six weeks for a haircut, and, if married, his wife by hospital rule had to live beyond a radius of a hundred miles.

But the pendulum can swing too far in the other direction, and it has done so. We find ourselves in unanimous lack of sympathy with the nine to five attitude prevalent in many house staffs since World War II. The important phenomena of disease simply do not occur on a nine to five basis, nor do they follow a regular schedule of every other night off or every other weekend. When a schedule set up for convenience is interpreted as an immutable law independent of the patients' needs, the internship fails to provide a vital aspect of future medical life.

Moreover, throughout this report it will be seen that we feel a hospital administration and staff which conducts an internship program must hold itself to very high standards. There exists responsibility to any community in which graduates later practice. Maintenance of such standards represents an immense amount of work for many persons and a very considerable expenditure of money. Only by his devotion to the educational opportunity presented can the intern give recognition to the hospital for this work and this money. If there is general abuse of the present buyer's market for the intern, if the nine to five attitude becomes more prevalent, it is not beyond our conception that many a hospital with fine educational facilities and a busy attending staff will find it easier to get along without interns.

VI. WHAT ARE THE CRITICAL ASPECTS OF THE CONTENT OF AN INTERN EDUCATIONAL PROGRAM?

A. *Teaching Rounds.*—In a sincere effort to provide sound internship education, many hospitals today have put in excellent laboratory facilities for application of basic scientific advances to patient care. They have employed experienced directors of intern education and they have impressive printed lists of weekly educational conferences and seminars by distinguished visiting scientists and clinicians. Few of their printed descriptions carry much mention of ordinary bedside teaching rounds. The caliber of these rounds is often the best evidence of the difference between what is on paper and what actually goes on in the daily life of the intern.

As one meets interns who graduate from some of these hospitals, their handling of themselves with individual patients quickly shows that much of their conceptual information is as yet meaningless in application. It is true they have taken many histories, done many physical examinations, done much laboratory work, assisted at many operations, and sat with notebook open in many conference rooms, but few of their histories have been examined in their presence, few of their physical findings checked. Their diagnostic or therapeutic opinions are rarely inquired into, and often these are recorded in the chart with a brevity which does not meet the standards of a thoughtful student of disease. No matter how many formal conferences, basic science seminars, therapeutic reviews, or other exercises are held, these only take on full meaning in the light of regularly scheduled traditional teaching rounds.

Here, the intern presents his findings to his attending doctor, is directly quizzed on his own interpretations before the senior man gives his. He compares the senior man's questions to the patient with the questions he has asked, the older man's techniques in physical examination and thought processes with his. He is brought into direct self-scrutiny in the concrete clinical instance. From formal conferences he can glean information which may be applicable to pass written examination papers; it is not applicable to the individual patient until it has gone through the kind of fire described. Here is the best place to learn the operation of the teamwork demanded by modern medicine.

It has been said that in every field the best teaching proceeds by example of the teacher as well as by precept. We add, that for the best learning, the student needs the time and courteous attention of the teacher, such that students' thoughts become sufficiently explicit for self-scrutiny to take place. In providing this opportunity, teaching rounds can become an exercise unparalleled in many other fields of education. Everyone who can contribute to the patient's problem, from pathologist to social service worker, needs representation in the discussion.

Let us list some of the things teaching rounds are not: 1. They are not specialty rounds. Infectious disease rounds, cardiac rounds, hematology rounds, etc., are valuable for focusing detailed attention on special aspects of the problems of a given class of patients. Lacking the breadth, and the focus of attention on each patient as an individual, they can supplement but never can properly supplant teaching rounds.

2. They are not disposition or business rounds. By disposition or business rounds we mean the rounds devoted to such questions as detailed schedule of diagnostic studies, administration of therapy, arrangements of operative schedules, discharge and follow-up dates, social service arrangements for convalescence, and most important of all, the management of daily details affecting the patient's comfort; e. g., sedatives, cathartics, visiting hours, and visitors. These rounds are an essential in any hospital whatever its teaching responsibilities, and can be of real educational value. But for expediency they must exclude anything beyond immediate detail. Thus they differ critically in atmosphere and content from true teaching rounds and can be made speedily by a hurried attending doctor.

To be assured, in making rounds with students and house staff, that all involved in patient care are aware of and working on the implications of clinical problem, takes time. Any experienced physician or surgeon can assure himself, and perhaps his personal assistant or resident, of the clinical implications in one-half or even one-quarter of this time. When teaching rounds drift toward disposition rounds, the give and take between house staff and teacher (characteristic of good teaching rounds) drifts toward monosyllabic exchanges between chief resident and attending man as they leaf through the chart. Junior members of the entourage stand and wait until, after a brief statement of policy and words of explanation and encouragement to the patient, rounds move on.

TABLE 5.—*Questionnaire Items 43-59: From the Following (List) Select and Number in Order of Importance Major Defects, if Any, of Your Internship*

1937 Graduates			1947 Graduates		
Order	Reason *	Number Rating	Order	Reason *	Number Rating
1.	Lack of supervision....	1,178	1.	Lack of supervision....	788
2.	Few teaching exercises.	1,178	2.	Heavy patient load.....	742
3.	Program lacking	1,149	3.	Program lacking	733
4.	Heavy patient load....	666	4.	Lack of responsibility..	684
5.	Lack of responsibility.	592	5.	Few teaching exercises..	678
6.	Excess laboratory work	548	6.	Excess laboratory work	441
7.	Excess private patients	370	7.	Excess private patients	425
8.	Rapid rotation of services	366	8.	Too many attendings..	336
9.	Too many attendings..	351	9.	Rapid rotation of services	335
10.	Lack of staff competence	278	10.	Routine duties	319

*Other reasons given included inadequate facilities, light patient load, too many teaching exercises, etc.

3. They are not social occasions. This needs emphasis on services which predominate in adult private patients who are not too sick. To watch an older clinician in his personal contacts with private patients is a valuable privilege if not misused by the senior man. There is no misuse if the basis is shared clinical responsibility rather than the development of a retinue. An attending man who shares responsibility without inward fear of untoward consequences usually carries the warm regard of his house staff beyond that demanded by their relative positions in the hospital hierarchy. This regard cannot be feigned. When genuine, it cannot fail to be communicated to both the patient and the patient's family. But still these are not teaching rounds.

Teaching rounds on a predominantly private service face a special problem. The private patient comes from the attending man's office. The private attending man knows to some extent the history and physical findings on his patient before the intern stands to present his version. So, unless keenly aware of the teaching implication of his rounds and aware that interns usually come up with new facts about his patient or unfamiliar literature, he may regard time spent in checking and discussion as wasted in patient care. (Such time rarely seems wasted in patient

care for the public ward attending man, for he has no preconceived notions on diagnosis or therapy of a newly admitted patient.)

We present the problem of teaching rounds in this much detail because it brings into focus the two most prominent defects in the internship experience listed by the classes of 1937 and 1947. In table 5 we find lack of supervision leading the list and lack of responsibility high on the list.

Now it might appear that lack of supervision and lack of responsibility are mutually contradictory complaints. If we think of the function of teaching rounds, as here developed, the contradiction disappears. When the appraisal of the interns' findings and plan is given systematic and regular scrutiny before the crystallization of the patient's program, there is combination of responsibility and supervision of the highest type. In these hospitals house staff *esprit de corps* is high, and the hospital regularly fills its intern roster.

B. *Outpatient Experience.*—In our opinion outpatient experience is an essential for the internship. Here the intern meets community resources that back the work of the doctor in the maintenance of health—the resources of social service, of public health facilities, and of facilities for chronic care, for convalescence, and for arrangement of a patient's work in terms of his capacities. Although psychological, social, and economic factors are constants in the experience of all illness, outpatient work enables the intern to obtain a more direct experience of how these factors affect the health of the ambulant patient who continues to live in his community.

The care of hospitalized severely ill patients, important as it is, gives the intern only a partial picture of the background and the consequences of the illness in the life of the patient. Thus we conceive outpatient work to include follow-up of the intern's inpatients as well as assignment to patients not sufficiently sick to warrant hospitalization. Continuity of observation points to the need of inpatient facilities for the care of at least part of the latter group when this is indicated. Seen in terms of continuity of patient observation, "disposition" work in an outpatient department is of very limited value. When his outpatient assignment is devoted to refilling prescriptions for patients with charts of massive thickness which he has no time to read, to doing routine physical examinations on patients he will never see again, the intern's time is wasted for education.

Some disposition work is of course necessary in any outpatient department. There is no objection to the intern's sharing in this work if the attending staff realize that the intern is not there solely to service the outpatient department and relieve them from all but brief supervisory duties. There is no objection to the intern's taking on patients with thick charts as well as new patients if he has comparable opportunity for follow-up and interested teachers against whose example he can measure himself.

In recent years some hospitals have set up "group diagnostic clinics" to give continuity of patient care. The initial workup of history, physical, and laboratory is done by student or intern, checked by an attending physician. The patients are then examined the same day by any indicated specialist. Representatives of each specialty include the intern in performance of their examinations and formulation of conclusion. This type of outpatient training is a very successful supplement to inpatient experience and can be carried on simultaneously if flexibility exists in scheduling. The diagnostic and therapeutic potentialities of the subspecialties are highlighted. An outpatient department so organized is superior to one which consists of independent subspecialty cells with a general clinic as the dumping ground for patients who do not fit any one clinic too well.

We recognize that many hospitals which are presently approved for internship training do not have outpatient facilities. We also realize that some approved private bed hospitals offer outpatient experience with scanty facilities for inpatient care of outpatients when this is indicated. We urge the development of these facilities and trust that the Council will grant these hospitals appropriate time to do so. However, we believe that no new hospitals should be encouraged to apply for approval in the absence of arrangements for outpatient experience integrated with inpatient care and that in the foreseeable future all hospitals lacking this should not be continued on the approved list.

Some hospitals may wish to seek outpatient facilities for interns by affiliation. An affiliation with an outpatient department in another institution often carries with it an initial loss in continuity of patient observation when the patient has to be hospitalized, but it is better than no outpatient department at all. Exploration of the affiliation can often lead to development of this continuity in a joint internship program. Such moves could conceivably strengthen the present internship programs of some geographically close private hospitals and public ward hospitals, whose facilities might have great educational value if put together but are of limited value in isolation.

C. *Surgical Experience.*—In hospitals with busy operating schedules, often the intern on surgery is found to spend the entire morning and part of his afternoon in the second assistant position in the operating room on patients, many of whom he has not had an opportunity to study preoperatively and whom he probably will not follow postoperatively. Such an assignment minimizes the value of this clinical experience as effectively as it blocks the intern's chance of participation in the formally scheduled teaching conferences of the hospital.

In our opinion, surgical internship experience should be centered around diagnostic considerations, both in general surgery and in its subspecialties; on postoperative care; and on emergencies, both minor, which he can handle himself, and major, in which he is a junior team member. He should have enough operating room experience to conduct himself without clumsiness and to be well oriented in usual operating room procedures. In some hospitals with large public wards and a small staff, interns carry out a considerable volume of surgery with a minimum of supervision. Attractive to some young men, this kind of experience carries the danger of a false sense of accomplishment. Some grow to realize this, others never do; in either case the educational result is not optimal. For the man planning general practice, we feel that direct operative experience (as first assistant or surgeon) should be reserved for his second year of training or later; for the man planning a career of surgery, it should come in the residency, not the internship.

D. *Experience in Psychiatry.*—The revision of the Essentials of an Approved Internship specifically states that separate psychiatric service is not necessary for internship training; indeed such a service would not be available in many general hospitals even if it were considered essential.

In keeping with our feeling about the role of other highly specialized disciplines, we believe it is sufficient to have psychiatric consultation available and, far more important, regularly used for patients assigned to the intern on various services. One must distinguish between psychiatry as a basic science and psychiatry as a special medical skill. We believe the former to be an indispensable part of all medicine; the latter is the province of graduate training and beyond the internship. Certain basic science aspects of psychiatry, namely, those relating to the psychology of acute and chronic illness, of disability, of surgical intervention, of convalescence, and of the doctor-patient relationship are of common concern to all those who care for the sick. We believe that knowledge of these matters should be shared by all members of the teaching staff as such knowledge should be applied to the study and care of all patients.

Psychiatric consultation is available currently to many hospitals. It is important that this consultation be used not only for emergency problems of disturbed psychotic patients but introduced regularly (weekly) so that the intern may be guided in his understanding and care of a wide range of the emotional problems of his patients. It is just as important that an intern appreciates the significance of the hyperactive anxiety symptoms seen in a patient whose stroke has removed him from the sphere of useful employment as it is that he be familiar with the manifestations of major psychoses.

We urge that any hospital without attending psychiatric staff, and located where potential staff is available, remedy this defect. In localities where the specialty of psychiatry is not sufficiently developed to fill this need, for the present we recommend that the Council be not too rigid in application of this specification until the hospital staffs have had time to attract appropriate personnel.

E. *Laboratory Experience.*—High in the list of internship defects, in the opinions of the classes of 1937 and 1947, is excessive laboratory work. We recognize that this criticism has some validity, but we cannot approve the solution adopted by many hospitals since World War II: the indiscriminate turning of all

laboratory work over to technicians. Few of our interns have even a moderate skill at such daily procedures as examination of blood smears, urine sediments, and stools. More complex examinations to many men mean little more than typed reports. Today's interns often think they have such skills, but their mistakes show that they have not personally made enough examinations to give them judgment they will later need to check up on such technicians as they have in practice. We believe this experience belongs to the internship and, if lacking, is rarely made up for later.

We recommend that at one period in the rotating internship (e. g., on medicine where emphasis is on diagnosis) the intern be responsible for personal performance of all significant laboratory work. We do not believe he should carry out admission routines on other services where they represent a gross screening. (When, on such services, the technicians come up with abnormalities, he again should be held personally responsible for checking them.) Moreover, multiple personal visits to the hospital laboratories are essential when abnormalities are found. Memories of microscopic sections, of electrocardiograph tracings, of culture plates, of the technical limitations and errors in biochemical procedures should supplant typed laboratory reports in the intern's mind. Interns being interns the personal example of attending men is essential to achieve this.

If most of the patients on a service are of the private check-up type, insistence on house staff laboratory work brings the complaint, "We are being used to do technical work for which the patient might well pay." If performance is insisted on by service chiefs, we have seen honorable and excellent interns resort to subterfuge to avoid the requirement. *Per contra,* if most of the patients on the private service are really sick and the service chief sticks to his guns, and, in addition, shows critical interest in routine laboratory results, he can accomplish a phase of teaching, albeit with some grumbling at the time, that his students and interns will later thank him for. A hospital which neglects this aspect of education in an effort to attract interns should not give an internship.

F. *Hospital Records.*—In the Essentials records are discussed in terms of minimal hospital requirements, not optimal teaching standards. A hallmark of a sound teaching service is the appraisal note, which is written three to seven days after admission. Supplementing the history, physical examination, progress notes, and discharge summary, it is the most difficult note to write. It demands thoughtful but brief synthesis of all relevant information (from that obtained by a social case worker through that derived from complicated laboratory procedures) into the general biology of the patient's problem. It demands reasons for choice of specific laboratory procedures and therapy for this particular patient (with reasons for rejected alternatives) and appropriate reference to the literature when indicated. Finally, there must be included a statement on expected progress and the effect of the illness on the general life situation of the patient. It implies the recording of the young physician's clinical hunch. A written record is essential for the sharpening of this power when the chart is later reviewed in follow-up study and predictions can be compared with events. It is our belief that this type of note is an essential of every intern's record. For some surgical patients it may take no more than three or four lines, but its brevity does not change its value. This value requires that senior men on the service read it, criticize it, and record their own agreement or differences.

VII. SOME SPECIFIC CHANGES IN THE ESSENTIALS OF AN APPROVED INTERNSHIP

Autopsies, Bed Occupancy, Filling of the Intern Roster, and Intern Stipends.—The revised Essentials of an Approved Internship states in formal language minimal standards. The preceding detailed discussion is given so that the background of our thinking is available to those concerned.

The minimal standards have three specific changes. First, the autopsy percentage is raised from 20 to 25%, which we feel most hospitals will have little difficulty in achieving. The requirements for annual inpatient admissions have been raised from 2,500 to 5,000 (exclusive of the newborn); the minimum bed capacity also has been raised from 100 to 150 beds, (exclusive of bassinets).

There is one requirement which is new in kind: Any internship program which in two successive years does not obtain two-thirds of its stated intern complement be disapproved for internship training. This is based on the clear-cut fact that no matter how good the internship looks on paper, how rich its patient material and extensive its laboratories, or how well-known its attending staff, an intern cannot get what he needs if a shorthanded house staff results in such a load of routine work that he has no time for the educational aspects of his experience.

We do not anticipate that many hospitals will be disqualified on this count. Rather we expect that hospitals which are failing to meet their internship quota by a large margin will engage in a careful self-scrutiny as to whether their internship program as planned is working out in practice. We also anticipate that hospitals may avoid disqualification by voluntarily reducing their intern quota and at the same time reducing the number of beds for which interns are expected to take responsibility. Beds removed from the intern scope will not count toward the minimum number of beds required for approval. The removal of such beds (e. g., in wards devoted to research or to a single type of chronic disease, in a private pavilion where an attending or courtesy staff are not interested in teaching) from the sphere of intern work may have the double effect of making a hospital's internship more attractive and reducing the national discrepancy between available internships and available interns. Suggestions for the management of hospitals or parts of a hospital without intern service are given in a subsequent section of this report.

Whereas the practice has become almost universal in the past 10 years to give interns some form of remuneration, the Essentials state that "when a hospital offers excessive salary, bonuses, or other forms of remuneration, there is reason to question the adequacy of the educational program." We feel that the Council should after searching inquiry use this specification with rigor. If the inquiry reveals that a hospital could better use money put into excessive stipends to attract and pay a director of internship education or otherwise to implement an educational program, this recommendation should be made. If excessive stipends continue to be found in a hospital without a comparable excellence of program, we recommend that the hospital be disapproved.

VIII. WHAT TYPE OF HOSPITAL SHOULD OFFER INTERNSHIPS?

We entered this stage of our discussion with many and varied suggestions. One opinion held that only hospitals without clinical clerks or medical school affiliation should offer internships. Hospitals with medical school affiliation should be devoted to residencies. Another opinion held that internships should be given only in medical school affiliated hospitals. The obvious facts are (*a*) that many hospitals without affiliation afford excellent internship experience and (*b*) that medical school affiliated hospitals often receive preference by men who wish a career in the scholarly or research side of medicine or in private practice complementary to very active teaching. We have boiled down our conclusions as to what type of hospital is appropriate for the internship to a single criterion. To quote the Essentials, it is a hospital in which "the educational benefits to the intern are considered of paramount importance, with the service benefits to the hospital of secondary significance."

We do not mean that the hospital which offers outstanding educational opportunity to the intern should receive no service from the intern in return. We do mean that when education is the primary emphasis, excellent service, as a rule, goes along with it, for the essence of medicine at its best includes service in every aspect. However, whereas education in medicine implies service, service in medicine does not necessarily imply education; and in practice where a hospital is out for interns to "get its work done," in any conflict between service and education, service usually wins to the detriment of the educational opportunity.

Basically, then, ours is the traditional concept of the hospital as an educational institution as well as a place for the care of the sick. As one member of the committee has expressed it, a hospital staff that teaches is the conscience of the medical profession. They provide an environment where any relevant question may be asked by anyone directly concerned with patient care and must be answered if an answer is available. If no answer is available, this, too, must be made clear. Educational excellence does not necessarily follow from a single type of financial auspice or staff structure. A satisfactory hospital can be uni-

terns by affiliation. An affiliation with an outpatient department

hospitals since World War II. the indiscriminate turning of

versity affiliated or not, can be municipal, federal, church, or privately financed, can have an open or closed staff, either full-time or part-time or both.

In trying to describe the type of hospital appropriate for internship training, we all had a deep feeling that good education and good patient care are by no means contradictory. The highest educational standards can be an enormous boon to both patient and his doctor. Many doctors with heavy responsibility for patient care do not want to or cannot take the time for the educational standards we envisage. We do not feel that hospitals so staffed should take the responsibility for the first year of a man's life after medical school. The pathway of a hospital planning an internship training program will be much smoother if its policy of staff selection is based on an accurate appraisal of which young men, not only are, but are likely to remain assets to a program of teaching.

For many community hospitals this is a new departure in appraisal. In these, staff appointment by tradition has followed a period of demonstration to the senior staff members of proficiency in the art of practice, often by service in one of their private offices as assistant or junior associate and in the hospital by service in the dispensary. Much more rarely a man already established in practice has been asked to join a staff by reason of proficiency in an area of specialty practice not well represented in the existing hospital group.

TABLE 6.—*Questionnaire Items 30-39: From the Following List Select and Number in Order of Importance Reasons You Held at the Time for Selecting the Particular Hospital (or Federal Service) in Which You Interned*

1937 Graduates			1947 Graduates		
Order	Reason	Number Checking	Order	Reason	Number Checking
1.	Reputation of hospital	1,936	1.	Reputation of hospital	1,617
2.	Intended practicing in Community	1,213	2.	Affiliated with Medical School	1,016
3.	Affiliated with Medical School	897	3.	Intended practicing in Community	937
4.	Desire for association with Staff member	789	4.	To secure residency appointment	937
5.	To secure residency appointment	661	5.	Desire for association with staff members	677
6.	Stipend offered	293	6.	Stipend offered	521
7.	Not affiliated with medical school	229	7.	Hospital's research activity	330
8.	Hospital's research activity	213	8.	Not affiliated with medical school	314
9.	Planned federal service career	83	9.	Planned federal service career	99
10.	Other reasons	504	10.	Other reasons	502

Thus, the prime emphasis throughout has been on skills in practice. If teaching talent (or interest in research) came along too, well and good. We believe that for each new candidate for attending staff, the following questions should be raised: 1. Can and will this man teach? 2. Is his interest in teaching simply because he knows his chances for staff appointment are poor in its absence? Or is it based on a curiosity about medicine and on pleasure in communication? 3. Is he the kind of man who, with increased pressure of practice, is likely spontaneously to set aside enough time for study, so that his teaching in 20 years' time will be as relevant as at the present? If these questions can be properly answered for the majority of a staff, this is the sort of hospital that should give an internship.

Those who work on the actual approval procedures for the A. M. A. find their greatest difficulty in appraising the will and capacity of a staff to carry out its written program. Self-appraisal here is essential for each hospital. Hospitals in which the clinical staff is not willing to provide this high level of educational experience should not seek approval. Obviously, mere possession of physical facilities—laboratories, beds—does not make an educational program. The presence of distinguished scientists in these laboratories or skillful clinicians in attendance upon the beds is necessary but not sufficient. A hospital should present very real evidence that all these can be integrated in teaching.

In table 6 are listed the reasons given by the classes of 1937 and 1947 in their selection of hospitals. General reputation leads the list by a great margin. Opportunities for residency training and for research were much lower than medical school affiliation or opportunity to get to know a community. This result very much corresponds to our own appraisal of what students say of their reasons of choice of internship. A good deal of their thinking is based on word of mouth from their slightly older schoolmates. Now we do not believe students or interns are in a position to specify the content of their curriculum, but they are rarely fooled about the sincerity and interest of their teachers. And in this sense a reasonable excess of internships over interns works for the good of the country's intern education.

We have had the suggestion that a formal list be drawn up in which hospitals approved for internship are rated in teaching value. It is our feeling (1) that the work of ranking is not one for the Council on Medical Education and Hospitals, that their function should be limited to approval or disapproval; (2) that the compiling and keeping up-to-date of such a list with justice might be a very cumbersome matter which would involve conflicts of opinion difficult to resolve in a formal publication and perhaps result in much hard feeling; and (3) that the existing informality of internship advice is not necessarily a drawback when medical schools make an effort to supplement the inevitable blind spots of a single advisor. The medical school which fails to have an internship advisory committee or other arrangement through which qualified clinical faculty members hold individual conferences with senior students concerning their choice of an internship, is derelict in its duty.

If fourth year students are given such an opportunity and in addition continue to get information from personal friends in preceding medical school classes as well as that derived from personal visits to hospitals, they will probably come out with as good an appraisal as a centralized list could provide. The information obtained by personal hospital visits is most representative when formal interviews with service chiefs, staff, intern committees, and administrators are supplemented by an informal social evening with members of the hospital's house staff.

We have asked ourselves what sort of hospital should not give an internship, and we believe the most significant aspect of our answer is as follows: Hospitals which expect service out of proportion to the training given, even if university-affiliated, or those attempting to pay in money or its equivalent for these services. Now there are some specific types of hospitals that obviously should not give an internship. So few of them do, that they are not a problem. They are: (1) hospitals limited to a single disease type (cancer, arthritis); (2) hospitals which are essentially research institutions; (3) hospitals whose patient population is limited to a single sex; and (4) hospitals limited to the care of the aged or a chronic incurable disease. (With respect to age, pediatric hospitals are an exception. Some of these in urban areas are general hospitals with services in medicine, surgery, the allied subspecialties, and psychiatry and offer excellent internships for those who plan to specialize in pediatrics.)

IX. SERVICE MEASURES FOR HOSPITALS WHICH ARE NOT APPROVED OR CANNOT FILL INTERN ROSTER

In addition to programs of two or more years aimed at preparation for general practice (which include an internship), the Council also approves general practice residencies in hospitals not approved for internships. To be of value, these residencies must comprise experience more advanced than is generally given in the first year and comparable to the traditional senior internship which often sent a man out into the community very well fitted for general practice. The nature of such programs will vary from locality to locality and should so vary. The general practitioner in South Dakota faces different demands from the general practitioner in New Jersey. Such programs can well be adopted to the interests of the individual house officer as well.

A hospital is likely to fail in such a program if it is a mere repetition of the internship; all the routine histories, physical examinations, and laboratory work on a busy service cannot be expected of the second year man to the exclusion of a real role in patient management; further, operating room experience should be more advanced than that available on the end of retractors. If a hospital without interns gives second year men this more advanced experience, what can be done about the service functions the interns traditionally perform?

Records.—Where possible, the referring staff man should make a summary of his office history and physical examinations for the admission workup. Some hospitals interested in better than

minimum standard records have made dictating machines and secretarial transcriptions available to their staff.

In recent years historical indexes (e. g., the Cornell Medical Index Health Questionnaire, filled out by the patient on admission and reviewed together with the doctor) have been under investigation. They require a minimum level of literacy and thus are not adaptable to some hospitals. They do not replace a doctor's history but may facilitate the recording of it when the doctor supplements the index with an integrating note. Check sheets greatly shorten the recording of the physical examination. As records they mislead when actually unexamined areas are checked as negatives. They are no better than the conscientiousness of the user.

Laboratory Work.—The remarks made in the section on intern laboratory work are especially applicable here. Where there are technicians the young doctors still need to look at their own microscopic sections, check the flask in questionable blood cultures, learn from contact with the laboratory some of the factors that makes such a biochemical determination as an acid phosphatase unreliable, be at the radiologist's side in diagnostically critical fluoroscopics. Every physician today should be able to do a white count and differential in an acute abdominal emergency in the small morning hours, and it is a poor prospective doctor who balks at this sort of laboratory work.

Routine Diagnostic Procedure and Therapy.—Intravenous medication, transfusions, gastric analysis, and the second assistantship in the operating rooms are all traditional functions of the intern. Many short handed hospitals have had success in organization of specially trained teams of technicians and graduate nurses who carry out this work under direction of attending doctors. One of the oldest teams of this type was developed for intestinal intubation in New York fifteen years ago. Recent years have seen development of intravenous and transfusion therapy teams with considerable success. Moreover the extension of the function of graduate nurses in the operating room and as assistants in specialized procedures (such as endoscopic examination, physiotherapy and traction management, and gas inhalation therapy) is being successfully carried out in many institutions.

Such extensions have broader implications than for the internship alone. In the presence of graduate nurse shortages, hospitals often find the best use of the graduates is in such teams and in administrative posts. Much bedside nursing traditionally done by the graduate nurse has been successfully delegated to less highly trained persons under supervision. Suitable as such teams are for hospitals without interns, we cannot close this section without noting that they are not always suitable for hospitals with interns. The intern who has not given transfusions himself will not know from firsthand experience how to set up and supervise a transfusion team when he becomes an attending man.

Employment of Junior Attending Staff in Rotation for Night and Emergency Work.—Another traditional function of the intern is as the first person on call in emergency coverage either in accident ward or serious developments in inpatients. A hospital may also consider the employment on a part-time basis of young physicians starting in practice. Given proper regard for professional relationships in his emergency care of hospitalized patients of his colleagues, such a position can be valuable in his learning the ways of the community.

Centralization of Office and Hospitalization Facilities.—Another step in facilitating round the clock care by a busy practicing staff is availability of office and laboratory facilities in or close to the hospital. The advantages from the hospital administration standpoint are obvious. The fixed laboratory equipment and personnel tend toward maximum private patient use as more and more of the attending staff's ambulatory patients are seen there. It is comparatively simple for a private physician to attend inpatients when he is on the spot most of the day.

Recently several university hospitals alert to the time saving value for their teaching staff have built adjacent office buildings. For when a doctor with his own office "on the other side of the city" from his home and his hospital on yet another side, carries a teaching load month after month, year after year, it is almost unavoidable that he will fall into the habit of "rounds and run." Likewise many groups associated in practice, urban and rural, have equipped small adjacent hospitals. The middle-sized non-university community hospital offers many existing examples to guide planning.

Externships.—Here a hospital near a medical school hires students to do routine work in extracurricular hours. Often hard on the student's curricular work, these jobs have enabled many an able man to make ends meet during his education. Although we do not believe that seen from the vantage point of a student's lifetime in medicine, the hours lost to the study in medical school are always worth the financial return, detailed appraisal of this aspect of the externship does not fall within the scope of this report. We limit ourselves to noting that the attending staff of many hospitals have found great use for externs' services. The continuation of this practice depends on the decisions of medical schools concerning its effect on clerkship education.

Substitute Interns.—We have indicated in an earlier section that on educational grounds we see no immediate relief for empty intern rosters by utilization of clerkships on a national scale. We recognize that often medical students seek summer or vacation jobs in hospitals widely different in atmosphere from the hospitals associated with medical schools. The broadened horizons in medical practice thus achieved are of as much value to the student as his services are to the hospital. And though this work is no substitute for properly conducted clerkships, nor does it fill the year round needs of the nonaffiliated hospital, it is a practice to be encouraged.

X. SUMMARY

The final report of the Advisory Committee on Internships is based on information obtained through extensive consultation with widely representative persons engaged in intern education, on materials placed at our disposal by several interested bodies including the staff of the A. M. A. Council on Medical Education and Hospitals who have responsibility for approval of internship programs, and on the results of a questionnaire which asked the medical school classes of 1937 and 1947 to give a searching appraisal of their internship experience. These sources are in supplement to the individual experience of individual committee members, all of whom have been and are intensively engaged in intern training under a variety of auspices and in varying localities. The committee has revised as a separate document the Essentials of an Approved Internship, to which this report stands as amplification and emphasis.

As the basic problem we recognized that today's development of clerkships and residencies demands an appraisal of the value of the internship and, if found valuable, demands a redefinition of its educational goals and methods. We have attempted to do so in terms of broadly applicable principles. Multiple rigid regulations as to content (still found in the rules of a few state licensing boards) we have avoided, for they neglect the capacity of an individual hospital to achieve high educational aims in ways unforeseeable by those outside a local situation.

Today the internship continues to hold a place usually indispensable and always important in the doctor's education. Fourth year clerkships the country over are insufficiently developed to give comparable opportunities for continuity of patient care or continuity of exposure to individual skilled clinicians devoted to teaching. With proper progression of clinical responsibility according to experience, the internship serves as a valuable year of orientation in the basic medical skills required for either general practice or specialization. In specifying one year, we define the internship as the first of a minimum of two years of supervised hospital study following medical school. We consider this minimum necessary for practice of medicine in any form, under military or civilian auspices.

In this study we recognize that the service aspects of the internship are inevitable, proper and necessary. Medicine is service, and the intern, though a student has progressed far beyond confines of classroom and amphitheater. But though intern education implies service, the converse does not always hold throughout. A staff doctor who expects intern service without giving personal devotion to the intern's development is as remiss as the intern who expects to learn medicine on a nine to five basis.

The basic essential of a good internship is a staff of skilled clinical teachers, who in their maturity have remained students of medicine and are engaged in patient care in the atmosphere of critical thought and free communication. We believe that internships should be offered by hospitals in which such men,

devoted to their daily teaching, are concentrated rather than existing as isolated individuals. Whether a hospital has or has not university affiliation, whether the patients are chiefly in private rooms or public wards, whether it is in a metropolis or a rural area makes little difference to an internship, given such a staff. In the absence of a capable staff, directors of intern education and elaborate didactic programs are useless; considerations of service structure and of rotation schedules are likewise meaningless.

A soundly planned rotating service which provides continuity of patient care, continuity of exposure to teachers, and progression of responsibilities gives a man a broader base for either general practice or specialization than does a straight service. By a soundly planned rotating service we do not mean the formerly prevalent (and still existent) quick circuit ride through a variety of specialty and subspecialty services, which has been aptly termed the "vibrating internship." We recognize the inherent advantages of straight or mixed services for a few who plan highly specialized or academic careers and approve these services providing sufficient breadth is achieved in the total hospital experience available to the intern.

With the regard to service structure, avoidance of the vibrating internship requires that major services be not extensively subspecialized at the intern level. Subspecialization at the residency level is not affected thereby. Available evidence indicates that simultaneous clerkship and residency programs enhance rather than detract from an internship program when progression of clinical responsibility is properly planned. Satisfactory internships, however, are given in many hospitals limited in residency training and without medical school affiliations.

We have recommended that the bed minimum be raised to 150 (exclusive of bassinets), that the annual admission minimum be raised to 5,000. We believe these are reasonable minimums to enable a hospital to provide an intern with suitable distribution of patients. The principle governing this is simple. The intern should have sufficient patients so that he can see a representative sample of the situations he is likely to encounter in practice.

Requirements of thorough work without overloading indicate that he should rarely have less than 15 and never more than 25 beds under his care on an inpatient service; the precise optimum depends on the nature of the service. Experience with the seriously ill, provided by inpatient service, is as essential as experience with the ambulatory patient given in the outpatient department. Neither an inpatient service which provides hotel facilities for outpatients nor a service limited to rarities or research patients provides proper experience. Private patients can be advantageous in intern education if the opportunities for study and follow-up are comparable to those on public wards and if identical high standards of teaching and care obtain. When this is not the case, when private beds are available for teaching in name only, they should not count in the total submitted by a hospital for approval.

We have recommended that a hospital provide its interns with outpatient experience which may be carried out simultaneously with inpatient work. Continuity of observation requires that some inpatient facilities be available for the intern's outpatients when indicated. We recognize that some hospitals, lacking these facilities, must seek them through affiliation and urge that they do so.

With regard to the internship program itself, we have emphasized the critical importance of regularly scheduled teaching rounds. On these, every significant aspect of each of the intern's patients is jointly examined by all concerned in care. The intern is brought into direct scrutiny of his own work in the light of the example of more experienced men. The formal conferences, lectures, seminars which appear today in so many printed programs of hospitals take values only in the light of such rounds.

We have recommended that surgical experience emphasize diagnosis, preoperative and postoperative care with just enough operating room work to give familiarity with the ordinary procedures.

We have emphasized that psychiatric experience is a necessary part of today's internship, that it does not necessarily require a separate psychiatric service, that it can be provided by proper and regular use of consultation and seminars on a wide range of psychiatric problems faced by patients on the major services.

We have suggested that subspecialties within medicine and surgery present the opportunities and achievements of their fields to the intern in the same fashion.

We have pointed out that the postwar tendency to relieve the intern of all performance of laboratory work may be consistent with his current wishes but is inconsistent with his long-range best interests. We have recommended that no hospital be approved for internship without a functioning plan for intern participation in laboratory work and for participation of the hospital's laboratory and scientific staff in his teaching exercise, including teaching bedside rounds. Today hospitals faced with unfilled intern rosters use such popular measures as relief from laboratory work in an endeavor to attract interns. Among other unsound attractions are improperly supervised surgery and excessive time off inconsistent with continuity of patient observation.

Taking advantage of the existing buyer's market, interns have sometimes made such demands of a hospital, to the detriment of their own education as well as of the hospitals educational capacity. In addition, the changing economic status of the intern has induced many hospitals to offer attractive living quarters for the intern's family and stipends unheard of in previous decades. Not in themselves bad, these features are no substitute for sound education. In recommending that the Council disapprove hospitals which offer such attractions in a fashion incommensurate with educational opportunities, we would remind intern candidates that they have only one internship whose excellence is directly related to many satisfactions later to be achieved in years of practice.

We recognize that the size of today's discrepancy between interns and internships has had unhealthy effects on hospitals, medical schools, interns and fourth year students. The expected increase in enrollment of medical students will fill the gap only partially. We do not believe that further relief can come from this source in the immediate future without danger to existing high medical school standards, nor do we believe complete closure of the gap is essential for either proper intern education or proper patient care. A very high grade of care can be frequently found among the 85% of the nation's hospitals not approved for internship. Some of the means valuable to achieve this care we have reviewed at the end of this report.

We expect that in application of the basic principles of intern education to existing approved hospital programs, certain areas will be eliminated from intern coverage and certain others will be seen to require reduced coverage. This must take place through self scrutiny by individual hospital staffs as well as through the efforts of the Council's staff in charge of the hospital approval program.

We have recommended that the Council be appropriately flexible in the application of the principles of this report and of the revised "Essentials" where soundly planned and successfully executed programs are in operation, and where a staff gives evidence of continuous self-scrutiny toward the attainment of such a program. Where this is not patently the case, or where an internship program fails to fill its stated intern roster by a factor of two thirds for two successive years, we have recommended that it be disapproved until appropriate adjustments can be made. For, no matter how good an internship program looks on paper, it is useless to the intern if he is overburdened with routines by reason of a shorthanded hospital.

Because the nature of our assignment brought us up against the shortcomings that exist in intern education, this report of necessity has stressed deficiencies and recommendations for their remedy. In so doing, we fully realize that in many hospitals the staff is doing a superb job of intern education in the face of many economic handicaps and other problems that hospitals face today.

Finally, in carrying out our study and in formulating our specific recommendations, we have sensed a changing situation comparable to the rate of change we face in almost every aspect of our lives. In submitting this final report we hope the Council will continue its policy of holding the place of the internship under close scrutiny. For, though we do not expect a change in the fundamentals of education, changing situations in which these must be applied may require frequent revision of specific recommendations.

BUREAU OF MEDICAL ECONOMIC RESEARCH

THE NORRIS PANACEA

Frank G. Dickinson, Ph.D.

Inquiries have been arising recently concerning a proposed American Federation of Medical Centers. The scheme is described in a book by Edgar H. Norris, M.D.[1] He has produced one of the strangest combinations of literature on medical economics. He has sought to present a scheme in which businessmen will be given a large degree of control over medical care in order to make medical care more efficient. This part of the mixture might appeal to the vanity of those few businessmen who believe that the big business executive can apply his methods with equal effectiveness to any and all aspects of human life. The second part of the mixture is a liberal dosage of those parts of the majority report of the Committee on the Costs of Medical Care of two decades ago that stressed the notion of a single institution in each community. This strange mixture is dressed up in attractive fashion designed to convince businessmen and all other citizens that Dr. Norris has found the road to the promised land. In other words, he suggests that the way to make medical care efficient in the United States is to give the businessman a much larger hand in its direction and to eliminate competition among the physicians who would actually provide the medical care. Thus, we have this paradoxical proposal: Businessmen, who have achieved success and efficiency through their initiative under a competitive system, can make our medical care system more efficient by stifling professional competition based on knowledge, skill, and personality.

After arguing there is room for improvement in the provision of medical care in the United States, Dr. Norris concludes that medicine is an industry and is, therefore, amenable to the principles of business management and mass production. Instead of trying to treat the weaknesses in our system, Dr. Norris wants to scrap the entire system for another of doubtful effectiveness but of not so doubtful expense, sacrifice, and far-reaching consequences. He proposes a form of panel medicine with restrictions on the patient's free choice of physician. To most of us medicine is not a commodity that can be produced, marketed, and sold to the consumer in identical packages. Rather, it is a service that has as many different manifestations as there are patients and can be effectively administered only to a particular individual by a physician of his choice and under circumstances that protect the intimate and personal relationship of the patient and his physician.

Dr. Norris may disarm the reader by declaring his opposition to compulsory health insurance financed by taxes. However, he would obtain regimentation of physicians by a voluntary means —the business executive and a single medical institution in each community or several such large institutions in large cities. Big business units are his remedy rather than government compulsion. His attempt to line up beside the overwhelming majority of physicians against government medicine reminds one of the famous statement by Maréchal Villars when taking leave of Louis XIV, "Defend me from my friends, I can defend myself from my enemies."

In the technique of his approach, Dr. Norris exhibits a remarkable reliance on national averages. From these national averages he derives certain rule-of-thumb plans for each medical center. A medical center itself would consist primarily of a hospital and a group practice clinic. All the physicians practicing in the hospital would be members of the group. One-third of them would be specialists and two-thirds general practitioners, because that seems to be what the national aggregates indicate are the nationwide proportions. Since in the national aggregates there are general cases, tuberculous cases, psychiatric cases, and contagious, convalescent, and diagnostic cases, the central hospital would treat all of these. In fact, a certain and definite percentage of beds would be apportioned to each type of case. Hospitals would range in size from 150 to 1,200 beds. (Hospitals now range from 26 beds to 11,000 beds.) In other words, Dr. Norris desires greater uniformity. Each medical center should be a prototype of the national format. It seems scarcely necessary to point out that a ratio of one specialist to two general practitioners would obviously not fit the medical care situation in a great majority of communities in the United States. Anyone who attempts to make a pinpoint study of the distribution of physicians in the United States will soon discover wide variations in the ratio of specialists to general practitioners. Perhaps Dr. Norris might reply that this lack of uniformity indicates a pressing need to "rededicate medicine." Within the field of specialization itself there are great variations. A community composed of young families certainly requires more obstetricians and pediatricians than does a sunshine city of the south with many older persons needing the services of heart and cancer specialists. The average requirement is a gross concept derived from hundreds, even thousands, of variations. Dr. Norris appears to worship the average. Had he pushed into the methodology of statistics in addition to gathering national data, he might have come to realize that the average is often insignificant, but the average is always attractive because it suggests simple, uniform solutions.

Consider the Hill-Burton Act, which has expedited the construction of hospitals in many communities in the United States. Experience with this act has shown that a hospital building suitable for one community is totally unsuitable for another. In some communities, hospitals were constructed whose maintenance was beyond the capacity of the community. Dr. Norris, of course, intends for his program to be financed through a nationwide private insurance plan, but insurance provides funds (claims) only where there are patients. A uniform pattern of hospitals would be one of the worst things that could be foisted on our system of medical care. A hospital unsuited to the particular needs of the community is a costly and wasteful operation, no matter how it is financed.

Dr. Norris in his book reviews in a dispassionate way some of the recent literature dealing with the growing number of specialists and the relative decline in the number of general practitioners and proposes a new type of practitioner. He is, of course, not alone in trying to see into the future of American medicine. And labeling his new type of practitioner a "personologist" does not seem to provide any solution to the problem created by the rapid trend toward specialization. He has coined a new label but has failed to draw a picture with which most students are not already familiar. Dr. Norris, in this connection, has ignored some of the very recent trends indicating a definite revival of interest in general practice—the growing emphasis on general practice in medical school curriculums and hospital training programs, in medical society doctor placement programs and among medical students deciding whether or not to specialize.

Many physicians and lay readers are earnestly seeking to solve some of the problems of rural medical care. They will derive little comfort from this book, which bemoans the disappearance of the general practitioner and insists at the same time that he must be housed with a group of specialists in a group practice unit in a central hospital. Trying to pull general practitioners out of rural communities into these *pro forma* centers is not likely to meet with the enthusiastic support of rural leaders. The problem of increasing the number of local physicians can be met effectively without the institution of the costly scheme of medical centers.

Dr. Norris would also do away with mental hospitals, tuberculosis sanitariums, and other specialized hospitals, and have

Director, Bureau of Medical Economic Research.

1. Norris, E. H.: Medicine Rededicated: Health by Community Enterprise, Detroit, American Federation of Medical Centers (limited private printing).

their patients housed under the same roof as general patients. Doubtless such an arrangement would be very desirable in some areas, but to set it up as a standard for the whole nation can scarcely be construed as a rededication of medicine; rather it would be a dedication of medicine to a preconceived, inflexible pattern.

While Dr. Norris has stressed the necessity of applying business methods to medicine—under the general direction of business executives—his scheme hardly sounds like good business. The greatness of American industry does not lie in a pattern of sameness, in uniformity of methods and facilities. It is one thing for a plant to be run with uniform efficiency, but it is quite another thing for all plants in an industry to follow the same basic pattern. One cannot quarrel with his desire for hospitals to be run more efficiently. But one can quarrel with his assumption that efficiency can be achieved through one particular set of requirements regarding size, arrangements, architecture, and the economic and professional relationships between physicians. He desires to promote a new organization—American Federation of Medical Centers—a sort of board of directors composed of businessmen without a single representative of the medical profession. The proposal to leave medical matters to physicians in this setup is not reassuring either to physicians or to patients. The national organization would stimulate and guide the development of medical centers, but in each medical center there would be a maximum attempt to eliminate competition and to promote a solitary local monopoly. All this in the name of making medical care more efficient! Would the practice of law be more efficient if all lawyers in a community were made members of a single law firm?

The notion of nationwide uniformity is also emphasized in the financing. A flat annual premium of $100—a nice round figure—per person would finance comprehensive benefits. At this point Dr. Norris comes very close to promoting that degree of uniformity that can come only through government, which he repeatedly assures the reader is highly objectionable to him. Experimentation with new policy forms is one of the ways by which insurance in any field of risk adapts itself to the changing needs of the people. Dr. Norris is not disturbed by the implication that this sameness in policy forms would stifle progress and competition; it is doubtful that he believes in competition.

Within his chapters on treating the patient as a whole there are a number of fine passages, but there is no startling revelation. Likewise his comments on the training of physicians provide interesting reading. But some of his comments on the state of health of the American people seem very strange, for example, "Quite unpardonably, syphilis, gonorrhea, pellagra, and tuberculosis ravage the country" (page 1). This alarming condition might have served as the lead in a health story in 1900 but sounds absolutely ludicrous today. Syphilis and gonorrhea are fast succumbing to the devastating effects of the antibiotics. Pellagra is rarely heard of today, and where it does exist the cause is more likely to be improper nutrition than lack of medication. Mortality from tuberculosis is less than one-sixth of the 1900 level, and some medical leaders hopefully predict its gradual disappearance. Equally misleading is his statement that "The stern fact confronts us that recently over one-third of our youth were declared medically unfit for military service" (page 3). For one who opposes compulsory health insurance this statement produces some strange bedfellows for Dr. Norris. His misstatement, "the number of physicians is decreasing in relation to our growing population" (page 3), is matched by his repeated inferences that medical care prices have risen exorbitantly. His misstatements regarding the incomes of physicians (page 169) indicate his lack of familiarity with the literature of medical economics. His frequent reference to the report of the Committee on the Costs of Medical Care (1932) suggests unfamiliarity with recent literature, for example, "There is no better yardstick than the budget of expenditures presented in 1932 by the Committee on the Costs of Medical Care" (page 54).

It is difficult to understand how he can call our present system of medical care "medicine's disorder" (page 178) in the light of the phenomenal strides in health progress during recent decades. Does the increase in the expectation of life at birth from 47 years to 68 years in a half century offer proof of medical disorder? Or, consider what has happened to maternal mortality since the Committee on the Costs of Medical Care delivered its *sine qua non:* the probability that a woman will die from pregnancy, childbirth, or confinement in 1953 is one-eighth of what it was in 1932.

Another defect of this book is the author's failure to compare the medical care "industry" with other industries. If he had done so, he would probably have concluded that it is America's most efficient industry. Its rate of technological progress is possibly the highest. The rate of increase in the "output per physician" is probably greater than the increase in output per person in almost any industry during the past dozen years or more. Although these gains are truly phenomenal, the 160,000 practicing physicians, aided by their fellow physicians who are not in active practice, will continue to try to improve the medical care that they give their patients. They do not need *pro forma* community health centers, staffed by physicians associated in group practice, protected by the monopoly of this institution under the guidance of big business executives, to give the American people an ever-improving quality and an ever-increasing quantity of medical care.

Dr. Norris' proposal suggests one final but very large question. Even if his proposal were both logical and practical, how is such a wholesale reorganization of individuals and institutions to be accomplished through "voluntary" methods? The only answer is that it cannot be accomplished except through governmental authority and dictation.

MEDICAL MOTION PICTURES

Special Problems in the Management of Peptic Ulcer: 16 mm., color, sound, showing time 38 minutes. Prepared by Everett D. Keifer, M.D., Lahey Clinic, Boston. Produced by Worcester Film Corporation, in 1952, for and procurable from Wyeth Incorporated, 1401 Walnut Street, Philadelphia 2.

This well-organized film presents the important points in the diagnosis and medical and surgical treatment of the unusual complications in peptic ulcer. The treatment of the uncomplicated duodenal ulcer is not discussed. There are some interesting pictures in which the esophageal ulcers associated with hiatal hernia and esophagitis are presented and the medical treatment outlined. The differentiation between the gastric ulcer patient to be treated medically and the one to be treated surgically is well illustrated and helps to clear up an impression, which seems to exist among many physicians, that the larger clinics are treating all gastric ulcers surgically.

The deep penetrating peptic ulcer, whether gastric or duodenal, is shown, and the reasons for surgical treatment are logically presented. Ulcers of the distal portion of the duodenum are shown both diagrammatically and roentgenologically. Treatment by vagotomy with resection or excision of the ulcer is effectively demonstrated. Complications as a result of pyloric obstruction due to stricture or edema with spasm is presented, and the methods for controlling and measuring the sodium and potassium chloride loss, as well as the fluid loss, is discussed. The importance of replacing the necessary salts, fluids, and glucose are emphasized, as well as the electrocardiographic studies showing potassium deficiency. The medical and surgical treatment is described. The medical and surgical treatment of gastric hemorrhage and jejunal ulcer is clearly outlined. The photography, animation, and narration are excellent. This film is highly recommended for senior medical students, medical societies, and hospital staff meetings.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Otolaryngology, Chicago

56:471-572 (Nov.) 1952. **Partial Index**

Laryngeal Manifestations of Intrathoracic Conditions. L. L. Titche.—p. 471.
Use of Stainless-Steel Sutures in Rhinoplasty. G. B. Fred.—p. 479.
Effective Vaccine Therapy in Chronic Bacterial Infections of Upper Respiratory Tract. M. Solis-Cohen.—p. 485.
Mammalian Ciliated Respiratory Epithelium: Studies with Particular Reference to Effects of Menthol, Nicotine, and Smoke of Mentholated and Nonmentholated Cigarettes. N. Rakieten, M. L. Rakieten, D. Feldman and M. J. Boykin Jr.—p. 494.
Permanent Retrograde Progressive Dilation: New Treatment for Chronic Laryngeal Stenosis in Children. R. Machado.—p. 504.
Symptomatic Laryngocele in Cancer of the Larynx. P. Meda.—p. 512.
Granuloma of Larynx Following Intubation: Spontaneous Recovery. L. A. Brown.—p. 521.
Lipoma of Hypopharynx Producing Menacing Symptoms. M. L. Som and L. Wolff.—p. 524.
Tumors of Nose and Throat. F. A. Figi and K. D. Devine.—p. 535.

American Heart Journal, St. Louis

44:645-804 (Nov.) 1952

Ballistocardiographic and Electrocardiographic Study of 328 Patients with Coronary Artery Disease; Comparison with Results from Similar Study of Apparently Normal Persons. W. R. Scarborough, R. E. Mason, F. W. Davis Jr. and others.—p. 645.
Hemodynamic Pattern in Tricuspid Valve Disease. M. C. McCord and S. G. Blount Jr.—p. 671.
Esophageal Pressure Pulse Patterns (Esophageal Piezocardiogram). II. Observations in Human Beings with Mitral Valve Disease. R. P. Lasser, B. Epstein and L. Loewe.—p. 681.
Electrocardiographic Assessment of Posterior Cardiac Infarction. C. Papp and K. S. Smith.—p. 696.
Mechanism of Complete and Incomplete Bundle Branch Block. M. I. Rodriguez and D. Sodi-Pallares.—p. 715.
On Some Aspects of Unipolar Electrocardiography in Presence of Pulmonary Pathology. T. T. Fox, H. Berger and C. E. Meidt.—p. 747.
Electrocardiographic and Serum Potassium Changes in Fatal Hyperthermia. L. I. Goldberg, H. K. Ezell and R. P. Walton.—p. 754.
Relationship of Some Electrolytes of Serum, Edema Fluid, and Urine in Case of Intractable Heart Failure. L. A. Soloff, J. Zatuchni and J. H. Boutwell.—p. 766.
*Revascularization of the Heart. Observations on Circulation Following Arterialization of Coronary Sinus. R. S. Hahn, M. Kim and C. S. Beck.—p. 772.
*Intramuscular Administration of Procaine Amide: Safe and Effective Method for Treatment of Cardiac Arrhythmias. C. D. Enselberg and M. Lipkin.—p. 781.
Clinical Studies of Intramuscular Injection of Digitoxin (Digitaline Nativelle) in New Solvent. V. Strauss, D. L. Simon, A. Iglauer and J. McGuire.—p. 787.

Revascularization of the Heart.—In an attempt to provide the heart muscle with an additional supply of blood, the authors placed a free graft of jugular vein between the aorta and coronary sinus in dogs. The operation was done in two stages, the first stage consisting of the placement of the graft and the second stage, done several weeks after the first, consisting of partial ligation of the coronary sinus at its ostium in the right auricle so that all of the blood did not escape into the auricle. Following this operation ligation of the descending ramus of the left coronary artery at its origin produced a lower mortality and less destruction of heart muscle than ligation of this vessel in normal unprotected hearts. In addition the usual electrocardiographic changes following coronary artery ligation were absent in the dogs with vein grafts. Complete ligation of the descending ramus, circumflex ramus, and right coronary arteries was accomplished with recovery of dogs and with only slight damage to the myocardium. Only the septal branch of the left coronary artery was patent in these experiments. In many of these experiments the artery distal to the ligature took on a bluish color within a few seconds after the artery was ligated. If the artery was cut, reduced venous blood escaped from the distal cut end, the heart beat became weak, and the electrocardiogram showed further evidence of ischemia. It appeared that this blood in the artery distal to the occlusion was serving a useful purpose. Several confirmatory observations were made in human patients in whom this operation was done for coronary artery disease. In these patients backflow of arterial blood took place in the venous system more readily than was observed in dogs with normal coronary arteries. The evidence indicates that blood can flow from the aorta, through a graft, into the coronary sinus and its tributaries. From the venous side of the circulation this blood can traverse the capillary bed and emerge from the arterial side of the circulation. In its transit through the capillary bed this blood gives up its oxygen. This retrograde circulation through the capillary bed can explain the benefit that this two stage operation gives to the heart in the presence of coronary artery occlusion. Some of these specimens showed communications between arteries and veins and between veins and arteries without the interposition of a capillary bed.

Intramuscular Administration of Procaine Amide.—Procaine amide (pronestyl®) hydrochloride was given intramuscularly to 62 patients with various rhythmic mechanisms. Of the 62 patients, 17 had supraventricular arrhythmias, 16 had ventricular arrhythmias, and 29 had normal rhythm. A total of 81 injections was given, chiefly in the buttocks. The drug was administered undiluted in single doses ranging from 0.1 to 2.5 gm., with total doses of 0.2 to 8 gm. In this series the drug was most effective against ventricular arrhythmias. In two patients with ventricular tachycardia, the rhythm was restored to normal within 15 minutes after doses of 0.2 to 1 gm. Mild to moderate hypotension occurred in 24 of 49 patients in whom the blood pressure was measured. None of the patients had severe hypotension. The onset of the action of the drug appeared 3 to 15 minutes after the injection of the drug, peak effects well within one hour, and dissipation of effects 2 to 10 hours after a single dose. The intramuscular route was painless, and despite the large volumes required and the acidity of the solution it did not cause significant local tissue reaction. Recommended doses are 0.5 to 2 gm. initially, and 0.5 to 1 gm. later at intervals of one to six hours depending on the severity and response of the arrhythmia. It is concluded that intramuscular injection is preferable to intravenous injection as a parenteral method, because it is safer and because it yields sufficiently rapid results in most cases.

American J. Digestive Diseases, Fort Wayne, Ind.

19:341-374 (Nov.) 1952

Studies in Etiology of Idiopathic Orolingual Paresthesias. M. Karshan, A. H. Kutscher, H. F. Silvers and others.—p. 341.
*The Case Against Mineral Oil. G. L. Becker.—p. 344.
Proteolytic Activity of Gastro-Intestinal Mucosa of Rabbit. F. Ito and M. Hayakawa.—p. 348.
Non-Specific Gastritis: Practical Procedures in Clinical Diagnosis. M. Golob.—p. 350.
Fatal Diffuse Haemorrhage in Cases of Laennec's Liver Cirrhosis. K. A. J. Järvinen and E. Leikola.—p. 356.
Granuloma Inguinale Associated with Hepato-Splenomegaly and Diffuse Pulmonary Infiltration. E. Laschê and E. S. McCabe.—p. 361.
Amebic Granuloma of Colon. W. A. Sodeman and P. R. Engle.—p. 363.

The Case Against Mineral Oil.—Becker stresses that a survey of the literature discloses no valid reason for the use of mineral oil in the treatment of constipation. On the contrary, the literature contains numerous derogatory reports, any one of which is sufficient to make the advisability of internal use of mineral oil questionable. Morgan has said that in some respects mineral

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Titles marked with an asterisk (*) are abstracted.

oil should be considered from the standpoint of toxicology rather than pharmacology. Mineral oil, including emulsions, alters the normal physiology of evacuation and tends to result in faulty bowel habits. It increases anorectal infection by compression into the anal crypts and retards healing of postoperative rectal wounds. As much as 60% is absorbed through the intestinal wall into the body, and the oil interferes with the utilization and retention of calcium and phosphorus and with digestion and absorption of other nutrients. It frequently produces a serious loss of weight, prevents the absorption of the oil soluble vitamins A, D, E, and K, tends to reduce prothrombin levels, and interferes with estrogen therapy. Indirectly it is a cause of pruritus ani and may induce "mineral oil poisoning." A dependent state may be produced so that increased doses are necessary, and local rectal conditions may be aggravated by conversion of the rectum into an abnormal reservoir. Mineral oil is esthetically objectionable. It may cause lipid pneumonia, may contain minute quantities of carcinogenic substances, and makes complete evacuation impossible.

American Journal of Obstetrics & Gynecology, St. Louis

64:951-1190 (Nov.) 1952. **Partial Index**

Effect of Preoperative Radiation of Adenocarcinoma of the Endometrium. H. E. Schmitz, C. J. Smith and C. J. Gajewski.—p. 952.
Empiric Usage of Low-Dosage Irradiation in Amenorrhea. S. L. Israel.—p. 971.
Current Concepts of Prolonged or Irregular Endometrial Shedding. C. E. McLennan.—p. 988.
Cause of Death in Patients Treated for Cervical Cancer. D. G. Morton and W. Dignam.—p. 999.
Clinical Evaluation of Use of Radium Therapy in Control of Benign Uterine Bleeding. J. B. Montgomery, J. P. Long and J. Hoffman.—p. 1011.
*Place of Hydrazinophthalazine and Thiophanium Compounds in Management of Hypertensive Complications of Pregnancy. N. S. Assali and R. Suyemoto.—p. 1021.
Intravascular Clotting Complications of Pregnancy. L. L. Weber, D. R. Meranze and F. Kaplan.—p. 1037.
Ten-Year Analysis of Breech Deliveries, 1939-1948. R. V. Knight and C. P. O'Connell.—p. 1049.
Abdominal Pregnancy: Report of Five Additional Cases. M. E. Barrett.—p. 1061.
Carcinoma of Uterine Corpus: Study of 184 Cases Seen at the Rhode Island Hospital, 1922 to 1945. G. W. Waterman, S. I. Raphael and W. Moskosky.—p. 1073.
*Intravenous Veratrum Viride in Treatment of Toxemia of Pregnancy. E. J. Alban Jr., M. S. Dennis and C. N. Swanson.—p. 1083.
Ectopic Pregnancy: Clinical Study of 136 Consecutive Cases. H. D. Priddle, C. W. Moulton and M. S. Dennis.—p. 1093.
Study of 245 Cases of Ruptured Ectopic Pregnancy. W. O. Johnson.—p. 1102.
Treatment of Functional Amenorrhea. W. E. Barfield and R. B. Greenblatt.—p. 1111.
Elective Induction of Labor. H. W. Erving and A. N. Kenwick.—p. 1125.
Effects of Morphine Sulfate on Cerebral Circulation and Metabolism in Normal and Toxemic Pregnant Women. M. L. McCall and H. W. Taylor.—p. 1131.
Surgical Management of Postpartum Hemorrhage with Particular Reference to Ligation of Uterine Arteries. E. G. Waters.—p. 1143.
Recurrence of Tumor After Total Hysterectomy for Carcinoma in Situ. J. B. Graham and J. V. Meigs.—p. 1159.
Management of Postpartum Hemorrhage by Prolonged Administration of Oxytocics. A. F. Daro, H. A. Gollin and V. Lavieri.—p. 1163.

Hydrazinophthalazine and Thiophanium in Hypertensive Complications of Pregnancy.—Hydrazinophthalazine, known as "apresoline," was given intravenously to 47 patients, which included 17 with acute toxemia of pregnancy (1 with eclampsia), 13 with essential hypertension associated with pregnancy, and some subjects with normal blood pressure. Blood pressure fell to normal and remained so for from 4 to 22 hours after a single dose in those with the hypertension of acute toxemia. The effect of the same dose in essential hypertension associated with pregnancy is not as striking as in toxemia. The effects of the drug on renal hemodynamics were investigated, and with both oral and intramuscular administration the drug failed to produce consistent changes. The authors conclude that the phthalazine compounds act through an as yet unknown mechanism. They are effective in a variety of hypertensive conditions, but seem to be more specific in hypertension of acute toxemia of pregnancy. Even when given by intravenous injections, their action lasts for a long time. In a second study the thiophanium compounds, particularly the one known commercially as "arfonad," were given to patients with various types of hypertension. The thiophanium compounds are ganglionic blocking drugs, and their effect is more pronounced in the neurogenic type of hypertension. Their action is of short duration, but it can be prolonged by intravenous infusion.

Intravenous Veratrum Viride Therapy in Toxemia of Pregnancy.—Whereas bed rest, low sodium diet, and mild sedation have produced favorable results in mild toxemia, results in the treatment of severe toxemia have not been satisfactory and have prompted a trial of intravenous administration of Veratrum viride alkaloids (veratrone®). Of 68 patients with toxemia admitted for treatment between December, 1950, and April, 1952, 28 were considered to have severe preeclampsia and eclampsia. Ten of these were selected for treatment with veratrone® administered intravenously. Eight of these patients had been treated by other accepted methods with no apparent improvement. Side-effects of nausea and bradycardia were noted, but were minimal and usually transitory. All patients showed good response to the drug, with rapid lowering of hypertension and clearing of symptoms of toxemia within 24 hours. Urinary output was diminished at the beginning of use of the drug, but the 24 hour output showed no decrease because of compensatory polyuria. Heavy sedation is avoided, and the toxic patient is able to cooperate more fully.

American Review of Tuberculosis, New York

66:509-650 (Nov.) 1952

Bronchospirometric Study of Pulmonary Function After Decortication in Pulmonary Tuberculosis. A. Falk, R. T. Pearson and F. E. Martin.—p. 509.
Closed Drainage and Thoracoplasty in Treatment of Tuberculous Empyema. W. H. Kastl and L. F. Knoepp.—p. 522.
*Combined Daily Terramycin and Intermittent Streptomycin in Treatment of Pulmonary Tuberculosis. F. L. Miller, J. H. Sands, R. Walker and others.—p. 534.
*Combined Corticotropin (ACTH), Para-Aminosalicylic Acid (PAS), and Streptomycin in Treatment of Pulmonary Tuberculosis. A. H. Meyer, L. W. Kinsell and R. J. Parsons.—p. 542.
Study of Positive Roentgenographic Findings for 1948 Washington Mass Survey: Two-Year Status. H. M. Payne, P. Enterline and J. Heuck.—p. 548.
Effects of Composition of Medium on Growth, Morphology, and Virulence of Mycobacterium Tuberculosis Var. Avium. C. G. Fabricant, J. Fabricant and G. Knaysi.—p. 567.
Isolation of Histoplasma Capsulatum from Sputum. J. M. Kurung.—p. 578.
Effect of Repeated Histoplasm Skin Tests on Skin Reactivity and Collodion Agglutination. J. A. Prior and S. Saslaw.—p. 588.
Comparative Evaluation of Hemagglutination Test and Hemolytic Modification in Tuberculosis. B. Schwartz, T. Mendelbaum, L. J. Spitz and others.—p. 594.

"Terramycin" and Streptomycin in Treatment of Pulmonary Tuberculosis.—The effect of a combination of oxytetracycline ("terramycin") administered daily and streptomycin administered intermittently on active pulmonary tuberculosis was studied in a group of 70 patients with (1) no previous antituberculous drug therapy, (2) bacteriologically proved disease (by culture), and (3) disease of greater than minimal extent. Four of the patients could not tolerate the full amount of oxytetracycline and were not included in the statistical studies; the other 66 received 5 gm. of oxytetracycline hydrochloride daily (1.25 gm. orally, four times a day) and 2 gm. of streptomycin sulfate every third day (1 gm. intramuscularly twice a day), receiving both drugs over a period of 120 days, during which a regimen of rest was strictly enforced. The disease was far advanced in 25 patients and moderately advanced in 41. Oxytetracycline is frequently irritating to the gastrointestinal tract, but virtually all patients can take a dose of 5 gm. daily with a minimum of difficulty. The drug was best tolerated when taken with meals. Additional nourishment was given with the evening dose. Corn syrup given with oxytetracycline alleviated the symptoms in some severe cases of gastrointestinal toxicity and occasionally a milk and cream mixture, dimenhydrinate (dramamine®), atropine, or phenobarbital was employed with good effect in reducing nausea. No definite toxicity attributable to streptomycin was encountered. The clinical improvement obtained was comparable to that observed with other drug regimens using streptomycin, except that weight loss was noted in 13 patients and 22 had no change in weight. Anorexia during administration of oxytetracycline is believed responsible for the weight loss.

Roentgenographic improvement was shown by 97% of the 66 patients, being marked or moderate in 50%. Bacteriological studies showed that cultures from 77.3% of the 66 patients were negative for Myco. tuberculosis at the end of drug therapy and 59.4% had "converted" their sputum by the end of a 60 day follow-up period. There was no bacterial resistance to either drug in any of 25 patients who had been able to tolerate the full oxytetracycline dosage and from whom positive Myco. tuberculosis cultures were obtained on or after the end of chemotherapy.

Combined ACTH, *p*-Aminosalicylic Acid, and Streptomycin Therapy.—Three patients who had advanced active pulmonary tuberculosis and extensive tracheobronchial tuberculosis were given combined corticotropin (ACTH), *p*-aminosalicylic acid, and streptomycin treatment. Each of the three had received maximum benefit from pneumothorax or pneumoperitoneum and had shown no benefit from previous treatment with streptomycin and *p*-aminosalicylic acid. Excision therapy was deemed advisable for the first two of the patients if the tracheobronchial tree could be suitably prepared for it. Streptomycin was given at the rate of 1 gm. daily for two weeks and 1 gm. twice a week thereafter. *p*-Aminosalicylic acid was also given in a dosage of 5 gm. three times a day. Administration of corticotropin was started at the end of the first week, the doses ranging from 12.5 mg. every six hours intramuscularly to 50 mg. intravenously every 12 hours. The doses given intravenously were excessive, judged by the standards now accepted. Roentgenographic examinations, made at weekly intervals, showed no improvement. The bronchoscopic picture was strikingly improved in two patients and unchanged in the third. Each of the patients developed a marked sense of well-being within the first week of corticotropin therapy. All had marked decrease in cough, and two who had been troubled by wheezing became free of this complaint within 72 hours of the beginning of therapy. All showed a drop in their temperatures to nearly normal levels. The two patients who improved bronchoscopically were subjected to excision therapy: one had a right pneumonectomy and died on the 12th postoperative day following development of a bronchopleural fistula; in the other, who had a right lower lobe removed and the remaining lobes decorticated, acute left ventricular failure developed on the second postoperative day and he died on the third. Further very cautious studies are needed to determine the efficacy of therapy with corticotropin, streptomycin, and *p*-aminosalicylic acid in preparing a tracheobronchial tree for excision therapy when other methods have failed.

Annals of Surgery, Philadelphia

136:761-904 (Nov.) 1952

Electrolyte Absorption Following Bilateral Uretero-Enterostomy into Isolated Intestinal Segment. B. Eiseman and E. M. Bricker.—p. 761.
Coarctation of the Aorta. F. Glenn and W. D. O'Sullivan.—p. 770.
Primary Neoplasms and Cysts of Mediastinum. D. C. Sabiston Jr. and H. W. Scott Jr.—p. 777.
Surgical Correction of Funnel Chest. F. G. King.—p. 798.
Experimental Production of Portal Hypertension. C. E. Wiles Jr., W. G. Schenk Jr. and J. Lindenberg.—p. 811.
Experimental Study of Physical Factors, Including Fibrin Formation, Influencing Spread of Fluids and Small Particles Within and From Peritoneal Cavity of the Dog. H. H. Zinsser and A. W. Pryde.—p. 818.
*Lobectomy for Pulmonary Tuberculosis. J. H. Forsee.—p. 828.
Carcinoid Tumors: Report of 38 Cases. R. C. Foreman.—p. 838.
Cystosarcoma Phyllodes of the Breast: Review of Literature with Addition of 15 New Cases. H. E. Stephenson Jr., S. Gross, S. L. Gunport and H. W. Meyer.—p. 856.
True Hermaphroditism. H. W. Fischer, C. E. Lischer and L. T. Byars.—p. 864.
Malignant Neurinomas of Peripheral Nerves. R. A. Wise and G. F. Asbury.—p. 874.
Papillary Cystadenocarcinoma of the Pancreas: Case Report. L. B. Burk Jr. and R. P. Hill.—p. 883.
Leiomyosarcoma of Jejunum, 17-Year History, Simulating Chronic Duodenal Ulcer. H. H. Janes and M. C. Taddeo.—p. 887.
Pneumatosis Cystoides Intestinalis. B. Sherwin and A. A. Messe.—p. 893.
Epithelial Cyst of the Stomach: Case Report. W. R. Deaton Jr. and E. E. Pautler Jr.—p. 898.
Tuberculous Sigmoidovesical Fistula: Case Report. J. V. Comer.—p. 901.

Lobectomy for Pulmonary Tuberculosis.—Forsee reviews observations on 219 consecutive patients treated for tuberculosis by pulmonary lobectomy during the five year period ending Dec. 31, 1951. Lobectomy was performed in 146 patients for persistent cavitary disease, in 57 for noncavitary disease, and in 16 for suspected but unproved tuberculosis. All lobectomies were accomplished by the individual ligation of the hilar structures. Lobectomy is the preferable method of management of the "immature" or "unripe" tuberculoma and in those not suitable for segmental or wedge excision. Often it is impossible to distinguish clinically a tuberculoma from a neoplasm, and surgical removal with histopathological study is mandatory. Lobectomy is also indicated in persistent cavitary disease involving principally one lobe, particularly if there is stenosis of the lobe bronchus, in persistent chronic active noncavitary tuberculous lesions involving principally one lobe, and in certain suspected but unproved chronic tuberculous lesions confined principally to one lobe. The following factors should be considered in planning lobectomy for tuberculosis: First, tuberculosis is a generalized disease usually manifested clinically in the lungs and lobectomy does not, in most instances, imply that the total area of active disease is extirpated. Second, lesions of recent onset that are still reversible should be permitted to heal before lobectomy is done. Third, removal of the upper lobe should be preceded, accompanied, or followed by thoracoplasty. Fourth, the period of hospitalization depends on the extent and nature of the tuberculous lesion, but a minimum of one year should be accepted by the patient prior to operation. Although long-term results of lobectomy are not yet available, the author feels that when the described indications and concepts are adhered to and with the aid of rest and antibiotic therapy, lobectomy is the safest, surest, and quickest method of achieving arrest of tuberculosis.

Arizona Medicine, Phoenix

9:1-80 (Nov.) 1952

Carcinoma of the Pancreas. E. P. Palmer.—p. 21.
Detection and Correction of Hearing Loss in the Younger Child. J. S. Mikell.—p. 23.
Therapy of Carcinoma of Thyroid Gland. J. M. Ovens.—p. 28.
Modern Treatment of Some Common Skin Diseases. L. G. Jekel.—p. 35.

Connecticut State Medical Journal, Hartford

16:807-884 (Nov.) 1952

Five Year Study of Maternal Mortality and Morbidity in Connecticut—1946-1950, Inclusive. C. E. Johnson.—p. 809.
*Cancer of Larynx in General Practice. J. S. Malkin and J. A. Kirchner.—p. 816.
Pre-Employment Medical Examinations to Select—Not Reject. L. W. Foker.—p. 822.
Twenty-Five Years of Surgery in Small Hospital. K. T. Phillips.—p. 826.
Health of the World's Children (Childhood in the Old World and the New.) M. M. Eliot.—p. 829.

Cancer of Larynx.—Ninety-four of 235 cases of laryngeal cancer that occurred in the years from 1921 to 1951 at New Haven Hospital were observed before 1941, and the remainder occurred between 1941 and 1951. These figures indicate a decided increase in incidence. All but 18 of the 235 patients with laryngeal cancer were men. The author regards the following as the most important predisposing factors: Infections of the upper and lower respiratory tract and mouth, exposure to industrial irritants, excessive use of tobacco, excessive use of alcohol, septal deviation with obstruction, and pulmonary tuberculosis. Although hoarseness is the commonest presenting symptom in cancer of the larynx, complaints such as cough, decreased general vigor, and dysphagia or dyspnea, with or without hoarseness, occur often enough to warrant examination of the larynx in any patient over 40 with these complaints. The importance of early diagnosis and treatment is indicated by the fact that 40% of the patients who survived five years were treated within six months and a total of 81% within 18 months of the onset of symptoms. Indirect (mirror) laryngoscopy should not be relied upon to exclude cancer of the larynx. Jackson said, "Death often lurks under an overhanging epiglottis." Direct laryngoscopy will reveal tumors situated in the anterior commissure, ventricle, pyriform sinus, laryngeal surface of the epiglottis, and other locations sometimes inaccessible to the mirror. Results of the initial biopsy were negative in 14% of the patients in this series who later were found to have cancer of the larynx. This illustrates the need for a close follow-up by a competent otolaryngologist of "chronic laryngitis" in any patient over 40.

Diseases of Chest, Chicago

22:491-606 (Nov.) 1952

Evaluation of Extrapleural Pneumonolysis: Based on Follow-Up Study of 70 Cases with Lucite Plombage. J. Zimmerman, J. B. Grow and A. Hurst.—p. 491.
Histoplasmin Sensitivity and Pulmonary Calcifications Among 1,000 Residents of Isthmus of Panama. H. A. Tucker.—p. 514.
*Avascularity of Tuberculous Lesions: Major Problem in Therapy. E. C. Jacobs and D. M. Kuhns.—p. 523.
Early Recognition and Treatment of Bronchogenic Carcinoma. J. Reiss, G. L. Baum and M. Kovnat.—p. 529.
*Contribution of Angiopneumography to Some Problems of Pulmonary Physiopathology. R. Rimini, A. Rodriguez, R. Burgos and others. —p. 539.
Management of Esophageal Perforations. D. J. Dugan.—p. 556.
Management of Some Difficulties in Pulmonary Resection. D. G. Alarcon. —p. 570.
Hemothorax Following Incomplete Reexpansion of Lung After Artificial Pneumothorax. N. Diamond.—p. 580.
Emphysematous Bullae and Pulmonary Tuberculosis. E. Rothstein and J. W. Moberly.—p. 587.

Avascularity of Tuberculous Lesions.—Streptomycin has produced at least temporarily excellent results in early acute tuberculosis, miliary disease, thin-walled cavities, and other lesions in which the blood supply remains relatively good. Results of streptomycin therapy have been uncertain, however, in chronic fibrocaseous and fibrocavernous tuberculosis in which the blood supply is relatively poor. Thus it appears that its effectiveness is directly proportional to the blood supply to the lesion. Pathologists and phthisiologists have recognized that many tuberculous lesions, from tubercles to chronic far-advanced disease, are avascular. The extensive thrombosis and obliterative endarteritis of vessels entering chronic tuberculous areas of disease produce essentially avascular lesions. Other closely associated pathological changes, ischemic (caseous) necrosis and fibrosis, further increase the avascularity. There is some evidence that streptomycin penetrates these pathological barriers; however, when it enters in less than therapeutic concentrations, it is neither tuberculostatic nor tuberculocidal, and the tubercle bacilli become resistant. Efforts are being made to penetrate pathological barriers with cavernostomy, potassium iodide, antihistaminics, detergents, streptokinase, and tuberculin so that drugs may come into direct contact with tubercle bacilli. Of these, tuberculin appears to revascularize tuberculous lesions, exposing tubercle bacilli to therapeutic levels of chemotherapeutic agents.

Angiopneumography.—Comparative angiopneumographic and bronchospirometric studies were made in 24 patients with pathological conditions that essentially affected only one lung. A correlation was observed between the results of the two methods, in that both the respiratory and circulatory functions of the abnormal lung were reduced. The circulatory shunt in the lung thus seems less important than was formerly thought. Angiopneumographic study therefore might take the place of the bronchospirometric study in the majority of cases. Angiopneumography also is capable of revealing the function of the various segments of each lung. The following conclusions were based on 41 angiopneumographies in 37 patients with various pulmonary lesions, mostly of tuberculous origin: 1. In ulceroexudative tuberculosis the respiratory function is moderately reduced, in proportion to the extent of the process. 2. In unilateral pneumothorax with a clear and elastic stump, some diminution of function can be observed; on the contrary, the function is very much reduced or abolished in cases complicated by atelectasis of the stump or by serofibrinous or purulent pleural effusion. 3. The residual capacity of a lung, after the pneumothorax has been abandoned, is inversely proportional to the degree of the complications that arise. 4. In pachypleuritis and in partial stenosis of a main bronchus, the respiratory function is reduced much more than would be indicated on ordinary plates. 5. The respiratory function disappears in fibrothorax and in atelectasis. 6. Pulmonary decortication, carried out because of pachypleuritis, results in improvement in the respiratory function, demonstrated by the improvement of the pulmonary circulation.

Georgia Medical Association Journal, Atlanta

41:477-533 (Nov.) 1952

Anesthesia for Peroral Endoscopy. L. Rumble Jr., A. V. Gude and W. H. Galvin.—p. 480.
Abdominal Pregnancy with Survival of Mother and Infant. M. F. Arnold and W. R. Baker.—p. 484.
Familial Polyposis. D. B. McRae.—p. 485.
Temporal Arteritis: Report of Case with Pleocytosis and Total Blindness. A. M. Knight Jr.—p. 487.
Acute Hemorrhagic Nephritis in Children. D. F. Cathcart.—p. 492.
Otitis Externa: Etiology and Treatment. P. Lucas.—p. 495.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

6:1-208 (Nov.) 1952

Treatment of Tumors of Thyroid Gland. I. M. Ariel.—p. 32.
The Child and His Environment. E. A. Strecker.—p. 43.
Soft Tissue Rheumatism. W. P. Holbrook.—p. 53.
Preparation and Use of Placental Serum. C. F. McDonald and L. J. Van Hecke.—p. 61.
Relief of Pain Due to Cancer of Head and Neck. T. E. Douglas Jr. —p. 65.
Why People Faint. J. V. Warren.—p. 71.

Journal of Aviation Medicine, St. Paul

23:415-544 (Oct.) 1952. **Partial Index**

Animal Studies of Subgravity State During Rocket Flight. J. P. Henry, E. R. Ballinger, P. J. Maher and D. G. Simons.—p. 421.
Crash-Worthiness of Aircraft and Crash Injury Prevention. E. J. Baldes and J. J. Ryan.—p. 433.
Human Tolerance to Acute Exposure to Carbon Dioxide. Report No. 1: Six Per Cent Carbon Dioxide in Air and in Oxygen. C. S. White, J. H. Humm, E. D. Armstrong and N. V. Lundgren.—p. 439.
Temperature Changes in Human Subjects During Exposure to Lowered Oxygen Tension in Cool Environment. A. L. Brown Jr., G. F. Vawter and J. P. Marbarger.—p. 456.
Physiological Day-Night Cycle in Global Flights. H. Strughold.—p. 464.
Influence of Variations of Oxygen Saturation of (Arterial) Blood from Pressure of Cephalorachidian Fluid. R. Grandpierre, C. Franck and F. Violette.—p. 474.
Practicability of Contact Lenses for Pilots. J. Duguet.—p. 477.
Studies on Cerebral Physiology of Monkeys at 12 Negative G. T. D. Duane, R. L. Wechsler, J. E. Ziegler and E. L. Beckman.—p. 479.
Night Vision Training at USAF School of Aviation Medicine. W. E. Gulley.—p. 490.

Journal of Bone and Joint Surgery, Boston

34-A:761-1060 (Oct.) 1952. **Partial Index**

Treatment of Bone and Joint Tuberculosis; Effect of 1-Isonicotinyl-2-Isopropylhydrazine: Preliminary Report. D. M. Bosworth, H. A. Wright and J. W. Fielding.—p. 761.
*Digit Transfer by Neurovascular Pedicle. S. Bunnell.—p. 772.
Fractures of Carpal Navicular. C. J. Wagner.—p. 774.
Internal Splint for Closed and Open Treatment of Injuries of Extensor Tendon at Distal Joint of Finger. D. R. Pratt.—p. 785.
Dynamic Splinting for Prevention and Correction of Hand Deformities: Simple and Inexpensive Method. E. E. Peacock Jr.—p. 789.
Prevention of Postoperative Hematoma in Surgery of the Hand: Use of "Compression Suture." R. C. Tanzer.—p. 797.
Reconstructive Surgery for Defects in Shaft of Ulna in Children. C. C. Vitale.—p. 804.
Evaluation of Skin Grafts for Hand Coverage. S. M. Dupertuis.—p. 811.
*Myxoma and Myxosarcoma of Soft Tissues of Extremities. K. H. Sponsel, J. R. McDonald and R. K. Ghormley.—p. 820.
Transplantation of Hamstring Tendons to Femoral Condyles in Order to Improve Hip Extension and to Decrease Knee Flexion in Cerebral Spastic Paralysis. G. W. N. Eggers.—p. 827.
*Psoriatic Arthritis: Observations on Clinical, Roentgenographic, and Pathological Changes. M. S. Sherman.—p. 831.
Recurrent Anterior Subluxation of Ankle Joint: Report of Two Cases and Experimental Study. K. J. Anderson, J. F. Lecocq and E. A. Lecocq. —p. 853.
Closed Reduction, Plate Fixation, and Medullary Nailing of Fractures of Both Bones of Leg: Comparative End-Result Study. J. O. Lottes, L. J. Hill and J. A. Key.—p. 861.
Tuberculosis of the Rib. M. P. Johnson and E. Rothstein.—p. 878.
Congenital Elevation of Scapula. C. L. Jeannopoulos.—p. 883.
Resection of Distal End of Ulna (Darrach Operation): End-Result Study of Twenty-Four Cases. P. V. C. Dingman.—p. 893.
Tendon Transplantations in Lower Extremity: Review of End Results in Poliomyelitis: I. Tendon Transplantations About Foot and Ankle. J. A. Reidy, T. F. Broderick Jr. and J. S. Barr.—p. 900.

Digit Transfer by Neurovascular Pedicle.—The use of a neurovascular pedicle is presented as a practical method of transferring a digit to replace an amputated thumb. In this method a connecting skin pedicle or ribbon of skin is unnecessary and there is much greater facility in placing the transferred digit in one operation. In the case illustrated the thumb and adjoining

part of the dorsum of the hand were lost by gunshot wound and a pedicle skin flap was applied to the hand. The index finger had been amputated through its distal joint and the thumb through the base of its metacarpal. The index finger was pollicized. The skin at its base was completely circumscribed. The two volar digital vessels and nerves were exposed and preserved, and these were used as a neurovascular pedicle by which this finger was transferred to act as the thumb. The nerve to the second digital cleft was split back to the base of the palm, and the vessel to the long finger was cut and tied to preserve the blood supply of the index finger. The distal part of the metacarpal of the index finger was thrust into the base of the metacarpal of the thumb and held by one Kirschner wire. The long extensor tendon was preserved but shortened and rejoined. The transferred digit lived well; it had good circulation and normal sensation. Later its flexor tendon will be connected to furnish motion.

Myxoma and Myxosarcoma of the Tissues of Extremities.—Sponsel and associates reviewed the case histories and microscopic sections of all myxomatous tumors of the extremities placed in the pathology museum at the Mayo Clinic between 1910 and 1945. All tumors classified as myxomas, myxosarcomas, fibromyxomas, fibromyxosarcomas, myxolipomas, myxoliposarcomas, or myxochondromas, and other tumors classified under diagnoses suggesting myxomatous tumors were listed. Of several hundred slides reviewed, approximately 50 were identified as possible myxomas, and 16 in this group were considered to fulfill Stout's histopathological criteria for the diagnosis of myxoma. Fifteen of the 16 fell into one of two groups, distinguished mainly by differences in the arrangement of the silver-staining fibers and the vascular pattern. Tentative histopathological grouping into myxomas and myxosarcomas was made, and correlation of the clinical course with the two histopathological groupings justified the histopathological diagnoses. Tumors that histopathologically were myxomas were clinically benign; those that histopathologically were myxosarcomas were capable of metastasizing. Local excision of myxomas appeared adequate; however, in cases of myxosarcoma more radical excision and even primary amputation seemed justified. The authors conclude that the growth potentialities of myxomas and myxosarcomas can be foretold, and a prognosis can be given on the basis of histopathological examination. Both terms, "myxoma" and "myxosarcoma," should be retained.

Psoriatic Arthritis.—Sherman says that in most of the earlier reports on psoriatic arthritis the discussion is concerned with whether psoriatic arthritis should be distinguished from rheumatoid arthritis, the general consensus being that such a distinction is unwarranted. It is the thesis of this paper that such a distinction is possible and that psoriatic arthritis is a definite clinical entity. In the 15 patients discussed, the diagnosis of psoriasis was confirmed with the aid of skin biopsy, the lesions ranging from a few small and hardly noticeable patches to almost generalized involvement. In the majority of patients, there was an interval of several years between the onset of the skin changes and the appearance of joint symptoms, which never preceded the skin disorder. During exacerbations of the arthritis many patients had pains and aches in several joints, particularly in the spine. The clinical and x-ray manifestations were generally limited to the hands, wrists, and feet, with the major changes in the distal joints. The histories of 7 of the 15 patients are presented. No patient had fever, leukocytosis, or lymphadenopathy; an asymmetrical pattern of involvement was the rule, and no patient showed "rheumatoid" ulnar deviation nor significant atrophy of skin or intrinsic muscles. No patient had iritis or cardiac changes, and in no case were subcutaneous nodules demonstrated, which were regarded as the most characteristic lesions of rheumatoid arthritis. The synovial membrane obtained by biopsy appeared to be thickened and injected in psoriatic arthritis, and the edges of the articulating surfaces were eroded. Frequently this destruction involved also the adjacent shaft. The pathological changes were not sufficiently specific to serve as a basis of the diagnosis. Both arthritis and skin manifestations responded to corticotropin and cortisone, the former to significantly lower doses. Improvement with hormone therapy was not permanent. The disabling deformities of the toes were relieved by radical surgery.

Journal of Gerontology, St. Louis

7:533-658 (Oct.) 1952. **Partial Index**

Histochemical Alterations in Autonomic Ganglion Cells Associated with Aging. N. M. Sulkin and A. Kuntz.—p. 533.
Urinary Stress Incontinence in the Female. R. Lich Jr.—p. 555.
Attitudes of the Aged Towards the Older Worker; for Institutionalized and Noninstitutionalized Adults. J. Tuckman and I. Lorge.—p. 559.
Costs of Chronic Illness. R. M. Hilliard.—p. 565.
Statistical Analysis of Geriatric Rehabilitation. L. Z. Cosin.—p. 570.
Gerontologic Programs in England as Seen by an American Observer. G. F. McCoy.—p. 579.

Journal of International College of Surgeons, Chicago

18:403-630 (Oct.) 1952. **Partial Index**

Intestinal Intubation in Bowel Obstruction. F. I. Harris.—p. 403.
Giant Cell Tumors of Bone. H. W. Meyerding.—p. 414.
Significance and Management of Acute Spontaneous Thrombophlebitis in Superficial Veins of Lower Extremities. E. L. Lowenberg.—p. 422.
Lumbar Sympathectomy for Advanced Occlusive Peripheral Arteriosclerosis. F. L. Pearl and L. M. Michels.—p. 435.
Bilateral Pyelitis Cystica and Ureteritis Cystica: Case Report with Six-Year Follow-Up. L. P. Wershub, T. J. Kirwin and L. Biel.—p. 443.
*Review of 300 Cases of Protruded Intervertebral Discs Treated Surgically. R. D. Woolsey and J. L. K. Tsang.—p. 456.
Some Principles of Pancreatic Surgery. H. N. Cooper and J. A. Montgomery.—p. 464.
Enigma of Retroperitoneal Masses. M. L. Brodny and H. Hershman.—p. 469.
Clinicopathologic Correlation of Parotid Tumors with Therapeutic Applications. S. L. Perzik.—p. 479.
Tumors and Cysts of Neck. A. S. Jackson.—p. 484.
Pancreatitis: Current Concepts. J. G. Probstein.—p. 489.
Angulation and Rotation Osteotomy: Nonshortening, Nondisplaceable, Telescoping, Impaction Type of Osteotomy. H. E. Billig Jr.—p. 495.
Division of Spermatic Cord as Aid in Repair of Recurrent and Other Difficult Inguinal Hernias. C. J. Heifetz and A. Goldfarb.—p. 498.
*Repair of Abdominal Hernia with Steel Cloth Implant. D. J. Preston.—p. 513.
Results of Treatment of Urethral Rupture. S. Petkovic.—p. 522.
Efficacy of Sleeve Anastomosis of Hollow Viscera. M. Behrend.—p. 529.
Anal Ileostomy and Complete Colectomy for Familial Polyposis of Colon. E. Carlson and G. Novacovich.—p. 533.
Phrenic Nerve in Surgery. U. G. Dailey.—p. 541.

Surgical Treatment of Herniated Intervertebral Disk.—Woolsey and Tsang reviewed the records of 300 patients who were operated on for rupture of an intervertebral disk. Patients with cervical disk lesions were excluded. More than three-fourths of the patients were men. A history of trauma was recorded in 175 of the patients, and the duration of pain and the frequency of the signs and symptoms are recorded. The diagnosis was erroneous in 26 cases, that is, 26 of 300 patients did not have ruptured intevertebral disk. Myelographic studies gave correct results in nearly 90% of the cases. In 23 of the patients two or more operations were required. Since one-fourth of these patients obtained no relief from the second operation, the authors feel that it is most important to reduce the number of secondary operations for ruptured intervertebral disk. Repeat operations can be avoided by myelographic investigations in all cases in which the presence of a ruptured disk is suspected, reducing the number of repeat operations for multiple disk ruptures and leaving determination of the presence of multiple ruptures less to the judgment of the surgeon. Myelography defines the degree and extent of exploration necessary and should result in satisfaction to more patients. Follow-up questionnaires were sent to all 300 patients and replies were received from 143. Among the private patients who replied, 94% were either improved or cured, whereas among those receiving compensation, particularly veterans, less than 80% claimed to have been benefited, probably because some feared that the questionnaire might influence their status as beneficiaries.

Repair of Abdominal Hernia with Steel Cloth Implant.—The high rate of recurrence following standard methods of hernia repair is caused chiefly by the fact that musculofascial defects are sutured under tension. Since fascia and cutis grafts lack sufficient strength, other materials have been implanted for hernia repair. Thin, finely meshed annealed stainless steel cloth most nearly fulfills the requirements of a repair material. Glass cloth is less desirable, chiefly because of a sizing that has to be used in weaving it. Wounds containing glass cloth implants show a slight inflammatory erythema, swelling, and tenderness, which subside in about three days after the operation. Stainless steel cloth and tantalum mesh do not require irritating sizing ma-

terials, and visible wound reaction is absent after their implantation. During the healing process, fibroplastic tissue growing into, over, and through the interstices of the cloth forms a solid patch to occlude the defect in the abdominal wall. A total of 284 implants of glass cloth or of steel cloth have been used in 235 patients with various types of hernias. Postoperative wound infection required removal of five glass cloth implants and two steel cloth implants. No hernias recurred through the region of the implant. Steel cloth implant repair of hernia offers a secure closure without wound tension and a better opportunity for permanent cure. The method is indicated for the closure of large abdominal defects with widely separated musculofascial edges, for recurrent and incisional hernias, and for patients who have weak, attenuated, or inadequate musculofascial structures.

Journal of Investigative Dermatology, Baltimore

19:307-387 (Nov.) 1952

Experimental Chromoblastomycosis in Man. R. D. Azulay.—p. 307.
Isonicotinylhydrazine (Rimifon®) In Treatment of Lupus Vulgaris: Report of Case. M. E. Obermayer, J. W. Wilson and P. N. Smith.—p. 311.
An Unusual Finding in Epidermophyton Floccosum. P. McCormack and R. W. Benham.—p. 315.
Asterol Dihydrochloride® In Treatment of Dermatophytosis Caused by Trichophyton Rubrum (Purpureum). J. W. Wilson, H. Levitt and O. A. Plunkett.—p. 319.
Late Therapeutic Results Produced by Low Voltage Roentgen Rays and Other Forms of Therapy in Certain Benign Chronic Skin Diseases. R. L. Baer, A. Borota and M. B. Sulzberger.—p. 325.
Some Observations on Pathogenesis of Systemic Lupus Erythematosus. S. C. Gold.—p. 333.
Some Endocrine Aspects of Skin Sensitization and Primary Irritation. II. Observations on Influence of Adrenalectomy on Cutaneous Irritation and Sensitization Induced by Various Chemical Compounds. A. Nilzén. —p. 337.
Inhibition of Keratin Formation with Unsaturated Compounds. P. Flesch. —p. 353.
Influence of ACTH and Cortisone Upon Experimental Achorion Quinckeanum Infection and Upon Anaphylaxis in Guinea Pigs. F. Reiss and L. Caroline.—p. 365.
Deep Infection of Mice with Trichophyton Rubrum (Purpureum). T. H. Sternberg, J. E. Tarbet, V. D. Newcomer and L. H. Winer.—p. 373.

Journal-Lancet, Minneapolis

72:503-544 (Nov.) 1952

Cooper's Ligament Inguinal Hernioplasties: Experiences with 323 Cases. H. Mattson.—p. 503.
Richard Everingham Scammon, 1883-1952. H. A. Wilmer.—p. 506.
Notes: Obstetric and Hematologic. R. T. La Vake.—p. 510.
Venereal Disease Problem Among North American Indians. H. De Lien and J. N. Hadley.—p. 513.
Progress in Insulin Physiology. E. Bruch.—p. 516.
Current Trends in Vital Statistics Registration. M. L. Watts.—p. 518.

Journal of Nutrition, Philadelphia

48:125-296 (Oct.) 1952. **Partial Index**

Dermatosis in Weaning Rats Fed Lactose Diets: I. The Influence of Relative Humidity and Diet. M. Schreiber, R. A. Collins, H. Niño-Herrera and C. A. Elvehjem.—p. 125.
Effect of Peptone and Amino Acid Ingestion Upon the Concentrations of Tissue Amino Acids. A. L. Sheffner and O. Bergeim.—p. 139.
Effect of Fat Level of Diet on General Nutrition: IX. The Relationship of Radiation Injury in Rat to the Fat Content of the Diet. A. L. S. Cheng, G. D. Kryder, L. Bergquist and H. J. Deuel Jr.—p. 161.
Intravenous Injection of Fat-Soluble Vitamins and Transfer to Milk of Injected Vitamin A. A. E. Sobel, A. Rosenberg and E. Engel.—p. 183.
Diminished Urinary Creatinine in Vitamin E Deficient Rats. E. L. Hove and J. O. Hardin.—p. 193.
Effect of Dietary Fat and Caloric Restriction on Protein Utilization. H. L. Rosenthal.—p. 243.
Basal Heat Production and Elimination of 13 Normal Women at Temperatures from 22 C. to 35 C. E. F. DuBois, F. G. Ebaugh Jr. and J. D. Hardy.—p. 257.

Journal of the Student A.M.A., Chicago

1:1-84 (Oct.) 1952

Interstitial Cystitis. M. Berkowitz.—p. 27.
Barbiturate Intoxication. H. G. Cramblett.—p. 32.

1:1-84 (Nov.) 1952. **Partial Index**

Electromyography. C. A. Bonsett and E. C. Hann.—p. 17.
Pharmacology and Hypertension. J. H. Moyer.—p. 22.

Kentucky State Medical Assn. Journal, Bowling Green

50:459-510 (Nov.) 1952

Trauma and Vasospasm. J. B. Floyd Jr. and J. F. Van Meter.—p. 459.
Simplified Approach to Diet Therapy of the Diabetic. M. H. Boldt and S. K. Boldt.—p. 462.
Upper Extremity Pain with Particular Reference to Diagnosis and Treatment of Lesions in Region of Intervertebral Foramina of Cervical Spine, and in Supraclavicular Fossa. W. G. Crutchfield.—p. 468.
Some Physiological Considerations in Treatment of Patients with Congestive Heart Failure. D. Luten.—p. 475.
Use of Excision of Head in Treatment of Fractures of Neck of Femur. O. C. Hudson.—p. 480.

Medical Annals of District of Columbia, Washington

21:585-650 (Nov.) 1952

Subarachnoid Hemorrhage Complicating Pregnancy: Report of Four Cases. C. S. Johnson.—p. 585.
Mesodermal Potentials. V. J. Dardin.—p. 591.
Unusual Diseases of the Spleen. B. E. Nunez.—p. 596.
Herpes Zoster and Varicella Occurring Simultaneously in the Same Case. B. C. Jones, Jr.—p. 606.
Johan Georg Mezger and the Healing Touch. E. Podolsky.—p. 608.

Minnesota Medicine, St. Paul

35:1017-1084 (Nov.) 1952

Modern Trends in Treatment of Goiter. J. J. Coli.—p. 1017.
New Drugs in Treatment of Hypertension. E. A. Hines Jr.—p. 1021.
Treatment of Convulsive Disorders. Z. R. Miller.—p. 1025.
Drug Therapy in Parkinsonism. S. K. Shapiro.—p. 1031.
Simple Proctologic Procedures. W. C. Bernstein.—p. 1036.
Rh Incompatibility Accompanied by Acute Renal Failure. L. D. MacLean, C. R. Hitchcock, A. Blomquist and A. J. Kremen.—p. 1039.
Treatment of Conduction Deafness with Roentgen Therapy. J. D. Sjoding. —p. 1042.
Anticoagulants in Cardiovascular Disease. J. F. Borg.—p. 1047.
Functional Uterine Bleeding. R. F. Sturley.—p. 1052.

Missouri State Medical Assn. Journal, St. Louis

49:877-956 (Nov.) 1952

Hepatitis: Differential Diagnosis by Laboratory Studies. H. Popper. —p. 893.
*Dermatologic Manifestations of Hypoproteinemia. D. B. Morgan.—p. 896.
Headache: An Otolaryngologist's Viewpoint of Differential Diagnosis and Treatment of Certain Types. R. E. Ryan.—p. 899.
Critical Survey of Management of Ureteral Calculi. E. H. Burford. —p. 905.
Treatment of Seborrheic Dermatitis ("Dandruff") with Selenium Sulfide Suspension. G. C. Sauer.—p. 911.

Dermatological Manifestations of Hypoproteinemia.—Morgan's attention was first focused on hypoproteinemia as a possible cause of dermatitis when he observed an elderly man with a chronic eczematized area over the lower half of the left leg. After varicosities, cardiac, and renal disease were ruled out, a plasma protein determination was made. Although the total was just above the lower limits of normal, the albumin fraction was slightly low. The patient was then given additional protein orally, and the dermatitis cleared within two weeks. Since then, Morgan noted that, although the majority of chronic dermatoses due to hypoproteinemia occurred in the age group beyond 60, this is not always the case. The areas most commonly affected are the legs and the feet, but occasionally only the arms or the hands are involved and, in severe cases, the entire body. The lesions are generally exudative, but sometimes are dry and crusted or scaly. The plasma total proteins and the albumin and globulin fractions should be investigated also in exfoliative dermatitis due to drugs such as penicillin and arsenicals. Severe generalized bullous diseases, such as pemphigus vulgaris, erythema multiforme, dermatitis herpetiformis and lupus erythematosus, may have an accompanying hypoalbuminemia. Pruritic patches of erythema, with or without eczematization, that follow varicose eczema usually have an accompanying hypoalbuminemia. The plasma proteins and the dietary habits should be investigated also in generalized pruritus in elderly patients, and in chronic atopic dermatitis or so-called disseminated neurodermatitis, which appears as lichenified dry reddened excoriated crusted patches on the face, neck, antecubital, and popliteal areas of young adults and older children. Whenever the plasma albumin fraction is below normal, a high protein diet and amino acid powders should be given as part of the therapy for any of these skin manifestations.

New England Journal of Medicine, Boston

247:663-698 (Oct. 30) 1952

*Intracavitary Administration of Radioactive Colloidal Gold. R. G. Rose, M. P. Osborne and W. B. Stevens.—p. 663.
Erythroblastosis Fetalis. VIII. Studies of Serum Bilirubin in Relation to Kernicterus. D. Yi-Yung Hsia, F. H. Allen Jr., S. S. Gellis and L. K. Diamond.—p. 668.
Pheochromocytoma with Rupture of Intracranial Aneurysm: Report of Case. E. F. Browne and J. S. Meyer.—p. 671.
Angina Pectoris Associated with Ventricular Bigeminy, Controlled by Procaine Amide. Report of Case. D. Davis.—p. 673.
Blood Volume in Various Medical and Surgical Conditions. N. I. Berlin, G. M. Hyde, R. J. Parsons and J. H. Lawrence.—p. 675.
Culdoscope as Aid to Diagnosis in Early Viable Ectopic Pregnancy. W. L. Fielding.—p. 684.

Administration of Radioactive Gold.—The properties and clinical applications of radioactive colloidal gold (Au^{198}) are briefly reviewed. Radioactive gold has found its greatest success and widest application in the attempt to eliminate intractable pleural and peritoneal effusion due to malignant neoplasms. Radioactive gold is commonly administered in a single dose of 25 to 100 mc. into the pleural space or 50 to 200 mc. into the peritoneal cavity. In patients with recurrent pleural effusion and in the majority of those with ascites the fluid is relatively thin in consistency and is not significantly loculated. Such an effusion can be withdrawn through a needle or trocar and the radioactive gold instilled by the same route. Administration of the gold by this trocar method, however, may have undesirable results such as ineffectual distribution of the radioactivity or the development of intraperitoneal abscesses with resulting cutaneous fecal or rectovaginal fistulas in patients with viscid or loculated ascites. A technique considered to be safe and effective in the administration of radioactive gold to patients of this type is described as follows: After evacuation of the fluid and other material from the cavity, followed by biopsy and exploration with an attempt to free any major loculations, a hard-rubber urethral catheter is introduced into each lumbar gutter at the level of the third or fourth lumbar dermatome. Such catheter placement allows subsequent delivery of the radioactive gold into each of the two major free peritoneal compartments, the right and left sides of the mesenteric attachment. A closed remote system suitable for instilling the material into the pleural or peritoneal cavity is presented. This method was devised to simplify handling, to minimize exposure of personnel to irradiation, and to reduce the possibility of spillage and radioactive contamination.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

81:1-331 (Oct.) 1952. **Partial Index**

Exogenous Emulsifiers and Fat Absorption. H. C. Tidwell and M. E. Nagler.—p. 12.
Effects of Single Intravenous Injections of Pituitary Growth Hormone to Normal Adult Men. A. Carballeira, H. Elrick, K. R. Mackenzie and J. S. L. Browne.—p. 15.
Effect of Hypophysectomy on Size of Remaining Kidney After Ureteroduodenostomy and Contralateral Nephrectomy. T. M. Astarabadi and H. E. Essex.—p. 25.
Use of Radioactive Iodinated Human Serum Albumin as Tracer Agent in Study of Cerebral Disorders. T. W. Farmer, H. Lanz, M. S. McCall and others.—p. 33.
Effect of Citrovorum Factor Upon Tyrosine Metabolism in Clinical Scurvy. G. J. Gabuzda Jr.—p. 62.
Relation Between Serum Complement and Plasma Electrophoretic Fraction Levels in Human Tuberculosis. G. Pitner and L. C. Smith.—p. 69.
Propagation of Coxsackie Virus on Chorioallantoic Membrane of Embryonated Eggs. M. O. Godenne and E. C. Curnen.—p. 81.
Cultivation of Coccidioides Immitis in Developing Hen's Egg. R. C. Burke, S. B. Salvin and R. K. Gerloff.—p. 91.
Thiocyanate Effect on Sodium Excretion in Normotensive and Hypertensive Subjects. K. L. Pines and G. A. Perera.—p. 149.
Size of Serum Hepatitis Virus. R. W. McCollum.—p. 157.
*Antibacterial Action of Erythromycin. T. H. Haight and M. Finland.—p. 175.
Resistance of Bacteria to Erythromycin. T. H. Haight and M. Finland.—p. 183.
*Observations on Mode of Action of Erythromycin. T. H. Haight and M. Finland.—p. 188.
Ineffectiveness of Aureomycin and Terramycin Against Rabies Street Virus in Mice. R. Fagan.—p. 213.
Effect of Bacteria and Their Products on Migration of Leukocytes. S. P. Martin and S. N. Chaudhuri.—p. 286.

Antibacterial Action of Erythromycin.—Erythromycin is a new antibiotic obtained from Streptomyces erythreus. It has been found active in vitro against a wide variety of micro-organisms. Haight and Finland found that erythromycin solutions retained their activity after prolonged storage in a cold or frozen state but showed progressive deterioration after several days at room or incubator temperatures or after brief exposures to 60 C or higher. Filtration of erythromycin through bacterial filters entailed the loss of some activity. The antibacterial action of erythromycin increased progressively with increasing alkalinity of the culture medium, within the pH range of bacterial growth. Many substances that may affect the action of other antimicrobial agents had no important effect on the action of erythromycin. Tests indicated that erythromycin was most active against the gram-positive cocci and was quite active against strains of Neisseria, diphtheria bacilli and Hemophilus, but for practical purposes it could be considered inactive against most coliform and enteric bacilli. Concentrations of erythromycin in plasma after single oral doses varied widely but in general were proportional to the dose. Maximum concentrations were found one or two hours after a dose, and no activity was demonstrated at six hours except following doses of 1 gm. Significant concentrations were maintained in the plasma with oral doses of 250 mg. or more every three or four hours. The amounts of erythromycin activity recovered in the urine appeared to be small after ingestion of single doses or after repeated small doses; however, on continuous therapy with divided doses, up to 15% of the amount ingested daily could be demonstrated in active form in the urine.

Mode of Action of Erythromycin.—Investigations on the action mechanism of erythromycin revealed that erythromycin may be either bacteriostatic or bactericidal, depending on the sensitivity of the organism and on the concentration of the antibiotic. Erythromycin exerts its effect only against actively multiplying bacteria.

Radiology, Syracuse, N. Y.

59:481-636 (Oct.) 1952

Interpretation of Some Radiologic Signs of Abnormal Pulmonary Function. R. P. Barden.—p. 481.
Detailed Roentgen Anatomy of the Orbits. L. E. Etter.—p. 489.
*Eosinophilic Granuloma of the Lung. R. W. Lackey, F. Y. Leaver and C. J. Farinacci.—p. 504.
Diagnosis and Localization of Organic Lesions of Central Nervous System Using Radioactive Diiodofluorescein. L. Davis and S. L. Goldstein.—p. 514.
Unilateral Calcification of the Basal Ganglia. S. A. Trufant and W. B. Seaman.—p. 521.
Loss of Radon Seed in Patient. Case Report. M. M. Manalan and W. J. Little.—p. 525.
Circumcaval Ureter. W. H. Muller Jr. and W. J. Engel.—p. 528.
Investigation of Cause of Lymphedema of Upper Extremity After Radical Mastectomy. J. M. Parker, P. E. Russo and D. L. Oesterreicher.—p. 538.
Study of Distribution with Seven Major Modifications of Transvaginal Method. A. W. Erskine.—p. 546.
Results of Radiation Therapy in Vascular Anomalies of Central Nervous System. G. Kaplan, B. Roswit and E. G. Krueger.—p. 555.
Synergistic Action of Cortisone and Total-Body Irradiation in Mice. J. H. Wentworth and J. A. Billows.—p. 559.
Synergistic Lethal Action of Certain Radioisotopes in Rats. P. R. Salerno, H. L. Friedell, J. H. Christie and M. Berg.—p. 564.
Polyp of Duodenal Bulb: Report of Case. R. W. J. Borron, L. Goldberg and C. E. Knowlton.—p. 570.
Gastroileostomy. J. A. Evans.—p. 573.

Eosinophilic Granuloma of Lung.—Lackey and associates believe that eosinophilic granuloma limited to the lungs has not been reported before, and they describe two histologically proved cases that they recently observed. They also describe an additional case of eosinophilic granuloma of bone with pulmonary findings. The roentgenologic picture is identical with that of Letterer-Siwe disease, Hand-Schüller-Christian disease, Gaucher's disease, and other xanthomatoses, consisting of a granulomatous infiltrate of nodular character, with associated localized areas of emphysema, and a slightly fibrotic background. The clinical manifestations are mild. Histologically the lesions in the lungs are identical with eosinophilic granuloma of bone. The authors believe that the two cases of localized pulmonary eosinophilic granuloma, like eosinophilic granuloma of bone, represent a monosymptomatic form of a systemic xanthomatous disorder, and that the term eosinophilic granuloma be expanded to include those cases in which there are extraosseous lesions such as those involving lungs, skin, and other organs.

FOREIGN

Australian J. Exper. Biol. and M. Science, Adelaide

30:287-362 (Aug.) 1952. **Partial Index**

Studies on Complement Fixing Antigen of Influenza Virus: I. Purification of Antigen. G. L. Ada, M. Donnelley and J. Pye.—p. 301.
Murray Valley Encephalitis Infection in Laboratory Mouse. I. Influence of Age on Susceptibility to Infection. F. Macdonald.—p. 319.
Id.: II. Multiplication of Virus Inoculated Intramuscularly. F. Macdonald. —p. 325.
*An Encephalitis Virus Isolated in South Australia. I. Some Characteristics of the Virus. J. A. R. Miles.—p. 341.
*Id.: II. Serological Observations on Virus and Its Relation to Other Arthropod-Borne Encephalitides. J. A. R. Miles and D. W. Howes. —p. 353.

Encephalitis Virus Isolated in South Australia.—Early in 1951 an outbreak of virus encephalitis occurred in Murray Valley, Australia. The course of the epidemic, the clinical picture, and the virus have been described. At the same time a few sporadic cases of encephalitis occurred in South Australia. From the brain in a fatal case a virus was isolated, and studies on this virus are described. Monkeys, mice, horses, lambs, silver gulls, suckling rats, and young chicks were shown to develop clinical disease after intracerebral inoculation with the virus. In rabbits, guinea pigs, weaned rats, pigeons and adult fowls no clinical disease has been observed, but the evidence suggests that the virus can multiply in these animals. Opossums and a kangaroo appeared to be completely insusceptible and sheep were insusceptible to peripheral inoculation. The embryonated hen's egg was susceptible to inoculation by the yolk sac and the chorioallantoic routes. The virus survived heating to 51 C for 30 minutes, but not heating to 56 C for 15 minutes. Filtration experiments suggest a particle size for the virus between 20 and 50 mμ. Serological investigations on this strain of encephalitis virus revealed that it is related to members of the Japanese B group of viruses but not identical with any of the previously recognized members. It is identical with the Murray Valley encephalitis virus. In the guinea pig and the horse, complement fixing antibodies to this virus are more rapidly produced than neutralizing antibodies, and in the horse neutralizing antibodies are more enduring than complement fixing antibodies. Field investigations on human and horse serums show twice as many positive neutralization tests as complement fixation tests. This difference is likely to be due to the more enduring character of the neutralizing antibody.

British Medical Journal, London

2:953-1006 (Nov. 1) 1952

Treatment of Tuberculosis of Urinary Tract. W. W. Galbraith.—p. 953.
Clinical Psychology and Some Forgotten Episodes. M. Culpin.—p. 955.
Significance of Testicular Exfoliation in Male Infecundity. M. Barton and B. P. Wiesner.—p. 958.
Endotracheal Insufflation with Oxygen in Treatment of Asphyxia Neonatorum. D. O'Brien and H. Roberts.—p. 963.
*Respiratory Effects of Salicylate. J. B. Cochran.—p. 964.
High Blood Pressure in the Elderly. H. Droller, J. Pemberton, C. Roseman and J. L. A. Grout.—p. 968.
Simplified Benzidine Test with Evaluation of Some Faecal Occult Blood Tests. A. Hughes.—p. 970.
*Transfusion Treatment of Women of Child-Bearing Age: Statistical Study of Incidence of Anti-Rhesus Immunization. W. Weiner, V. Norris and S. Davidson.—p. 975.
Infectious Mononucleosis with Thrombocytopenic Purpura. C. M. Ogilvie and T. E. Parry.—p. 977.

Respiratory Effects of Salicylates.—In an investigation of the respiratory effects of orally and intravenously administered salicylates, oxygen consumption, carbon dioxide output, and depth and rate of respiration were measured with a Knipping type closed circuit spirometer in nine subjects. Five were healthy young men, three had subacute rheumatic fever, and one had rheumatoid arthritis in a quiescent state. In two of the healthy persons and in the patient with rheumatoid arthritis two or three control 10 minute spirometer tracings were recorded after a standard breakfast of a cup of tea and a slice of toast, and then an intravenous drip of sodium salicylate (10 gm. in 400 cc. of distilled water) was given over a period of three to four hours. During the intravenous drip, 10 minute spirometer tracings were taken at approximately half-hour intervals. The remaining three healthy persons served as controls; they were not given sodium salicylate, but in every other respect were treated like those who received the drug. The three patients with rheumatic fever were confined to bed and received a standard breakfast, after which three consecutive five minute spirometer tracings were taken. When a satisfactory baseline had been obtained, acetylsalicylic acid (aspirin) was administered orally in doses of 1.5 to 2 gm. five times a day, and morning tracings were continued until treatment was stopped and the respiratory changes returned to the previous control values. The salicylate caused an increase in depth of respiration and a pronounced and progressive increase in oxygen consumption, with maximal increase of 30 to 40% with oral ingestion of acetylsalicylic acid and 60 to 70% with intravenous administration of sodium salicylate. The increased oxygen consumption following salicylate administration must be due to an increased metabolic rate. No definite conclusion can be drawn concerning the nature of the metabolic stimulation, and further study is required in both the normal person and the rheumatic patient. It is nevertheless believed that the pronounced and progressive increase in tissue oxidation following salicylate treatment may be of fundamental importance in the therapeutic action of the drug.

Precautions in Transfusion of Women.—Of 82,000 patients whose records from the regional transfusion service in Birmingham were studied for the period 1940-1949, 13,169 were found to be Rh negative. Of these 13,169 patients, 243 primigravidae or multigravidae women gave a history of having received a blood transfusion at some time during their lives or blood injections of untyped blood that was given as a therapeutic measure and 87 of these were found to be immunized against the Rh factor. The annual incidence of immunization among the 243 Rh-negative women who had received transfusions in most of the years previous to 1947 was over 40%. The percentage declined in 1947 and 1948, and in 1949 it was only 11%. This decline can be attributed to increased knowledge of the dangers of immunization and increased availability of Rh-negative blood. It is felt, however, that no immunization should ever occur if simple precautions are taken in the treatment of girls and women before and during the child-bearing age.

Deutsche medizinische Wochenschrift, Stuttgart

77:1309-1340 (Oct. 24) 1952. **Partial Index**

Physiology and Pathology of Intestinal Flora. T. Baumgärtel.—p. 1309.
*Hepatogenic Myocardosis. H. Abendroth.—p. 1311.
Tuberculosis of Bones and Joints and Formation of Urinary Calculi. W. Schulze.—p. 1313.
I. P. Pawlow's Final Creative Period. D. Müller-Hegemann.—p. 1316.
*Mechanism of Effect of Massive Salicylate Doses. E. Kelemen, M. Majoros, R. Soltész and B. Tanos.—p. 1317.
Treatment of Cancer with Fresh Mistletoe Extract (Plenosol®). F. Meythaler and F. Händel.—p. 1320.

Hepatogenic Myocardosis.—Of 17 patients with cirrhosis of the liver, 6 had severe cardiac decompensation and 8 had moderate debility of the cardiac muscle, while only 3 had no involvement of the heart. Variable but significant electrocardiographic changes were demonstrated in all of these patients, although their hearts were normal before the onset of the liver disease. These changes included general low voltage, or low voltage of the ventricular complex only, prolongation of the PQ time and of the QT interval, changes of the ST segment and of the T wave in all the leads, auricular fibrillation, and supraventricular and ventricular extrasystoles. As a rule patients with the severest cirrhosis of the liver had the severest decompensation of the heart and the most pronounced electrocardiographic changes. This parallelism suggests the term hepatogenic myocardosis for this condition. The patients with cirrhosis of the liver associated with myocardosis responded badly or did not respond at all to strophanthin and digitalis; some of them experienced reactions of intolerance with increased subjective cardiac complaints but not increased decompensation. Administration of cardiac glycosides is considered not very promising or even harmful. Improvement of myocardosis associated with cirrhosis of the liver is unlikely because of the serious anatomical changes in the liver. Cardiac disturbances associated with chronic hepatitis or chronic parenchymal damage were less refractory to treatment; they did not always require administration of digitalis or strophanthin to improve

or even to subside, and did so after daily duodenal irrigations with magnesium sulfate, short wave therapy of the liver, oral administration of dextrose, and intravenous administration of vitamin B complex combined with strict rest in bed and a high protein and carbohydrate diet.

Mechanism of Effect of Massive Doses of Salicylate.—Experiments made on rats and on man showed that an adequate increase of the serum salicylate level is associated with a regular reduction in the number of circulating eosinophils. A serum salicylate level of 35 mg. per 100 cc. or more in the fifth hour after the oral administration of 6 to 10 gm. in one dose or within four hours elicited significant eosinopenia in healthy persons, in patients with active rheumatic fever or rheumatoid arthritis, and in patients with nonrheumatic diseases. Administration of 5 gm. or less of salicylate did not elicit significant eosinopenia. In rats whose adrenals had been removed, salicylate stress elicited marked eosinophilia, thus demonstrating that the cortisone-like effect of the salicylate depends on the presence of the adrenals. Many of these rats died after administration of the massive dose of salicylate. Five of six rats died which were given 2.5 mg. per 100 gm. of body weight of N,N-dibenzyl-β-chloroethylamine (dibenamine®) hydrochloride and 10 to 12 hours later a massive dose of salicylate. The animals must have a functioning epinephrine and norepinephrine system in order to tolerate the damage caused by massive doses of salicylate. In five untreated patients with clinical and roentgenological evidence of a disturbed hypothalamus-hypophysis system who also had a negative reaction to the epinephrine test, eosinopenia was not elicited by the administration of a massive dose of salicylate. The function of the adrenals of these patients was satisfactory. These observations suggested the significance of the hypophyseal and suprahypophyseal structures. As a result of their experiences the authors state that administration of massive doses of salicylate causes general damage to the entire organism. This "damage" may be justified by its rapid and complete reversibility. The defense system of the organism, including the hypophyseal-adrenal system, mobilizes its homeostatic mechanisms, so that the tissues have at their disposal considerable amounts of "anti-arthritic" adrenal substances. This is evidenced by a more or less favorable effect of salicylate therapy on all types of diseases that respond to corticotropin and cortisone. The amount of biologically effective cortisone excreted by the kidneys of the persons who had been given massive doses of salicylate was found to be normal. Consequently, the mobilized corticoids are not excreted by the kidneys, at least in a biologically active form. It seems possible that they are used up by the tissues at an increasing rate. It could not be decided whether this increase is greater than the increase in the general metabolism. It is likely that salicylates also affect the central nervous structures. The amount of the antiarthritic substances placed at the disposal of the organism by the salicylates is not large enough to produce a remission of rheumatoid arthritis. At present a biochemical explanation of all the salicylate effects can not be given.

Edinburgh Medical Journal

59:509-572 (Nov.) 1952

Influence of Recent Advances in Leprosy on Present-Day Conceptions of the Disease in Relation to Its Diagnosis, Treatment and Prevention. R. G. Cochrane.—p. 509.
Application of F_{sss} as Routine Test in Sustained Hypertension. D. F. Gibbs.—p. 517.
Poliomyelitis. W. R. Russell.—p. 530.
Case for Wide Resection in Cancer Surgery. M. R. Ewing.—p. 540.
Post-Partum Blood Pressure Levels. H. R. Arthur and J. D. Chalmers. —p. 555.
Observations on Plasma Fibrinogen Content After Myocardial Infarction. E. Gilchrist and J. A. Tulloch.—p. 561.

Journal of Laryngology and Otology, London

66:529-582 (Nov.) 1952

Use of Systemic Aureomycin and Penicillin in Treatment of Chronic Nasal Infection. P. F. King.—p. 529.
Mechanism of Cochlea. R. Thomas.—p. 543.
Stapedial Fixation and Otosclerosis: Differential Diagnosis. N. Asherson. —p. 552.

Journal Obst. & Gynaec. Brit. Empire, Manchester

59:609-752 (Oct.) 1952

Cancer of the Body of the Uterus. M. A. van Bouwdijk Bastiaanse. —p. 611.
Abnormal Uterine Action in Labour. G. H. Bell and W. C. W. Nixon. —p. 617.
Place of Paediatrician in Maternity Unit. W. Gaisford and F. E. Stabler. —p. 663.
Stress Incontinence of Urine. A. Aldridge, T. N. A. Jeffcoate and H. Roberts.—p. 681.
Genital Tuberculosis in the Female. M. Haines and J. Stallworthy. —p. 721.

Lancet, London

2:789-838 (Oct. 25) 1952

Cause and Treatment of Leg Ulcers. S. T. Anning.—p. 789.
*Vagotomy in Treatment of Peptic Ulceration: Review of 1524 Cases. A. V. Pollock.—p. 795.
Calcinosis Universalis Treated With Adrenocorticotrophic Hormone and Cortisone. J. N. Briggs and R. S. Illingworth.—p. 800.
Antigenic Efficiency of Fluid and Precipitated Diphtheria Prophylactics in Very Young Babies and Lambs. M. Barr, A. T. Glenny, S. Hignett and others.—p. 803.
Measurement of Iodine-Concentrating Power as Test of Thyroid Function. G. A. Newsholme.—p. 805.
Succinylcholine in Treatment of Tetanus. R. Woolmer and J. E. Cates. —p. 808.
*Fatal Poisoning in Children from Aspirin, Quinine, and Anthisan. D. A. Slade.—p. 809.

Vagotomy in Peptic Ulceration.—Circulars were sent to the main surgical centers in Britain and records were obtained of 1,314 patients with duodenal ulcer, 127 with gastric ulcer, 82 with jejunal ulcer, and one with esophageal ulcer. A total of 745 of the patients were interviewed; 632 replied to a questionnaire; 19 had died within 28 days of the operation; 31 had died later; and 97 could not be traced. Vagotomy alone had been done in 736 patients. The recurrence rate was 18% in the 73 who had been subjected to vagotomy for gastric ulcer, 16% in the 74 treated for jejunal ulcer, and 6% in the 589 treated for duodenal ulcer. Many more patients had symptoms suggesting recurrent ulceration, but the recurrences were not proved. Forty-four per cent of those studied fell into the "unsatisfactory" group. The recurrence rate was only 1% among the 788 patients in whom the vagotomy had been combined with some form of drainage operation, but 9% had died or could not be traced. Symptoms suggesting recurrence were present in 7%, and the results were classified as unsatisfactory in 12% of these patients. The author concludes that vagotomy alone is unsatisfactory and that the immediate results are much better if vagotomy is combined with a gastric drainage operation. However, the recurrence rate over a number of years will be decisive in the definitive evaluation of this procedure.

Fatal Poisoning in Children.—Slade reports on three children who died as the result of poisoning. The first child, a girl of 18 months, died about 15 hours after she had consumed about eight 5-grain tablets (2.4 gm.) of acetylsalicylic acid (aspirin). Seven hours after ingestion the child vomited. No early symptoms of poisoning were noted. The second child, aged 21 months, had swallowed pills of iron and quinine sulfate. When her mother noticed her swallowing a pill, she gave her syrup of figs. A doctor, who could find nothing wrong with the child half an hour later, prescribed syrupus ipecacuanhae, but the child died in convulsions two hours and 15 minutes after she had swallowed the quinine pills. At necropsy the stomach contents contained 3 grains (0.2 gm.) of quinine sulfate together with three undecomposed pills. The third child, a girl of 16 months was found at noon putting to her mouth a box containing tablets of anthallan ® (3-dibutylaminomethyl-4,5,6-trihydroxy-1-isobenzofuranone). Shortly afterward she began to retch and vomited a little after having been given some warm tea. Then convulsions developed, and the child died at about 1:30 p.m. It was estimated that the child had consumed about six tablets. Absorption was probably hastened in case 2 by syrup of figs and in case 3 by warm tea. When there is a strong possibility that a child has swallowed possibly poisonous tablets, action should be taken to empty the stomach, and nothing should be given by mouth that could hasten absorption.

Medical Journal of Australia, Sydney

2:425-460 (Sept. 27) 1952

Treatment of Hypertension with Hexamethonium Bromide. E. G. McQueen.—p. 425.
*Management of Hypertension with Hexamethonium Bromide. A. J. Palmer.—p. 428.
Familial Cardiac Enlargement: Report of Two Cases. P. J. Parsons. —p. 435.
Acute Methyl Alcohol Poisoning. A. T. Pearson.—p. 437.
With the Migrants in Europe. J. N. Burgess.—p. 438.
*Prevention of Eye Injuries in Industry. W. S. Rowe.—p. 439.

Management of Hypertension with Hexamethonium Bromide.—Twenty-five patients with hypertensive retinal changes were hospitalized for treatment with hexamethonium bromide. Those with papilledema were classified as having "malignant" hypertension. For at least two, usually three, weeks after hospitalization, the patient was kept in bed and given sedatives and a low salt diet. Digitalis and mercurial diuretics were used when indicated. The blood pressure was taken daily and charted. The control period was terminated when the blood pressure readings had been level for one week. Following this the bromide salt of hexamethonium was given to the majority of patients. Hexamethonium bromide is a soluble substance dispensed in tablets for oral administration containing 250 mg. of the salt and in 1 cc. ampuls containing 100 mg. for subcutaneous, intramuscular or intravenous use. Relief from symptoms and significant reduction of blood pressure were obtained in a majority of patients with essential hypertension and in approximately 50% of patients with malignant hypertension. Unsatisfactory results were due to inadequate dosage and failure to make use of the effect of posture. In emotional patients with a labile blood pressure, the results were less satisfactory than in those with more stable personality. The combined use of phenobarbital and hexamethonium was found useful in this group. In elderly arteriosclerotic patients it is probably inadvisable to reduce the blood pressure too rapidly or too drastically because of possible thrombotic complications. Administration of hexamethonium by the subcutaneous route was more effective during the initial stabilization period in the hospital. It is the method of choice in an emergency such as hypertensive encephalopathy. Oral therapy seems adequate, however, for maintenance dosage in the majority of cases. Recently a combination of the bromide salt given subcutaneously and the bitartrate salt given orally has been used successfully. Side-effects due to parasympathetic block are a necessary accompaniment of adequate dosage. They tend to be severest in the first weeks of treatment and occasionally necessitate temporary suspension of therapy. A salt-free diet increases the tendency to bromism and also enhances sensitivity to hexamethonium. Toxic effects occurred with equal frequency when the drug was given by mouth or subcutaneously, with the exception of bromism, which was commoner with oral therapy. No fatalities occurred.

Prevention of Eye Injuries in Industry.—Rowe emphasizes the more important aspects of eye injury by a foreign body. Those most likely to receive eye injuries in industry are skilled workmen like machinists, tool-makers, die and pattern workers, and drill and lathe operators. Even temporary loss of one key man may have repercussions on the production rate. The compensation paid skilled workers for the loss of an eye is usually only about the difference between the wage the worker can now earn and that which he would still have been earning with two good eyes over a period of two or three years. Few workmen realize that, at the very least, they are risking a 33⅓% cut in salary for the rest of their lives every time they risk an eye injury. These considerations are insignificant beside the tremendous personal suffering and mental turmoil that the loss of one and particularly both eyes may entail. With regard to the incidence of eye injuries, the most hazardous industry is metal and metal products manufacturing, while mining and quarrying, building and general construction, and lumber and wood-products manufacturing follow in that order. Over 50% of the accidents are caused by flying particles. About 90% of these injuries are preventible by the use of protective goggles, guards, and helmets. Employers who provide and maintain goggles for every man exposed and who require that they be worn, have almost completely eliminated eye injuries.

Medicina, Buenos Aires

12:191-268 (Aug.) 1952. **Partial Index**

Cardiopulmonary Function in Chronic Pulmonary Diseases. A. Cournand. —p. 191.
*Treatment of Goiter in Professor Dr. Luis Güemes Institute of Surgery from 1942-1951: Study of Patients and Results Obtained. I. Goñi Moreno, G. A. Fromm and E. F. Lascano.—p. 205.
Normal Electrocardiogram in Man with Intraventricular and Intra-Aortic Leads. S. Mas, T. Sloninsky and M. E. Molins.—p. 224.

Treatment of Goiter.—In the last decade, 183 patients with goiter, either toxic or nontoxic, had an operation in the Güemes Institute of Surgery of Buenos Aires. Subtotal thyroidectomy was performed in 95 patients with nontoxic goiter, with a postoperative mortality of 1%. Postoperative hemorrhage and unilateral paralysis of the vocal cords each occurred in one patient. The patient who died in syncope 19 hours after the operation had diffuse goiter in association with hypertension, polcythemia, and marked cardiac insufficiency. Late results were satisfactory in 31 out of 32 patients observed. One patient had hypothyroidism and myxedema. Subtotal thyroidectomy was also performed in 87 patients with toxic goiter. Twenty-three patients in this group had antithyroid preoperative treatment with methylthiouracil or propylthiouracil to the point of functional normalization. At this point the treatment was discontinued, strong iodine (Lugol's) solution was given for three weeks, and the operation was performed. In the entire group of 87 patients, the operation was followed by two postoperative deaths, two cases of postoperative hemorrhage, five cases of hyperthyroid crisis, three crises of tetany in one patient, and bilateral paralysis of the vocal cords in one patient. Late results were satisfactory in 29 out of 32 patients observed. Two patients had hypothyroidism and myxedema and one had recurrent hyperthyroidism. Nodular resection was performed in a patient with toxic nodular goiter. A recurrence of hyperthyroidism 10 months after the operation was controlled by administration of methylthiouracil for four months. The authors encountered seven malignant tumors in nontoxic nodular goiters, either solitary or multiple. They observed that hemorrhage is not an operative complication in patients who had antithyroid preoperative treatment. The patients are tranquil during the postoperative period, and postoperative crises of hyperthyroidism and pulmonary atelectasis occur only in very rare cases. In histological preparations of the goiters of two patients with toxic goiter who had had preoperative antithyroid treatment, atypical cells with giant nuclei were observed. The drug had been given for an average period of 60 days in daily doses of 40 mg. The authors conclude that subtotal thyroidectomy is indicated in nontoxic nodular goiter, either solitary or multiple, because of the high incidence of neoplastic degeneration in this type of goiter. Medical treatment with antithyroid drugs should be restricted to limited indications. The drugs should be given for no more than one year, as they may stimulate neoplastic degeneration of goiter. The cases observed by the authors are not selected.

Minerva Chirurgica, Turin

7:619-690 (Sept. 15) 1952. **Partial Index**

Technique and Results of Radiological Investigation of Arteries. R. Fontaine, P. Warter, W. Montorsi and C. Raber.—p. 619.
Surgical Treatment of Chronic Arterial Obliteration by Means of Autoplastic Venous Grafts. E. Malan.—p. 659.
*Treatment of Varices of Lower Extremities Correlated with Functional Explorations of Venous Circulation. G. Cadili.—p. 675.

Treatment of Varicose Veins.—The therapeutic results obtained in 340 patients with varicose veins were reviewed. In 80 of them both legs were involved, but in most of the others the left leg only. Chronic or other diseases were not present, but most of them had jobs that required prolonged standing. In 228 patients the lesion was in the great saphenous vein, in 18 in the small saphenous vein, and in 94 in both of these concurrently. In 113 patients with early varices, treatment consisted of the injection of a 30% solution of sodium salicylate or monoethanolamine oleate into the vein beginning with small doses that were gradually increased up to 2 or 3 cc. according to the size of the varices. A follow-up of 53 of these patients after one year and of 22 after three years showed that varices had reappeared in three patients only, and two more had undergone surgical inter-

vention. In 83 patients with varices due to insufficiency of the saphenous and femoral veins, the great saphenous vein was ligated at its junction with the femoral vein, part of it was removed, the collateral veins were ligated, and 30 cc. of a sclerosing solution containing iodine and an alkaline iodide was injected into the distal end. The patient was out of bed on the 6th day and was discharged on the 8th or 10th day. Of 48 patients that were followed, only 4 had total occlusion of the saphenous vein and persistence of numerous varices, and two had other complications. In 46 patients with diffuse varices due to insufficiency of the saphenous, femoral, and communicating veins, saphenectomy with the patient under general anesthesia was performed in the thigh and the leg with Babcock's probe and was combined with ligation of the saphenous vein at its junction with the femoral vein and with ligation of all collateral veins. In a follow-up of 22 of these patients, only 6 had had recurrences. Combined surgical and sclerosing treatment with the patient under local anesthesia was performed in 73 patients with varices in the legs. Only 2 of 46 that were followed had recurrences. In 18 patients with varices of the small saphenous vein, this vein was sectioned at its junction with the popliteal vein and retrograde injection of the sclerosing solution was made after the venous ectasias had been emptied. Follow-up revealed that all these patients had recovered completely. Today the treatment of choice for varices is surgical and sclerosing treatment combined. Before treatment is instituted, the venous circulation of the extremities must be studied carefully and treatment individualized accordingly. Phlebography is a good diagnostic means, especially when the contrast medium is injected into the dorsal vein of the great toe. Retrograde phlebography is valuable mainly in patients with postphlebitic syndrome.

Münchener medizinische Wochenschrift, Munich

94:2161-2208 (Oct. 24) 1952. Partial Index

*Influence of Desoxycorticosterone and Cortisone on Resistance Against Toxins of Tubercle Bacillus. E. Tonutti and S. Fetzer.—p. 2161.
*Cardiac Anomalies in Mongolism. A. Kaiser and F. Schmid.—p. 2167.
Liabilities of Sick Insuranc Funds in Cases of Alcoholism. E. Springer. —p. 2173.
Treatment of Urogenital Tuberculosis. F. Jung.—p. 2179.
Regulation of Retardation of Coagulation Induced by Bishydroxycoumarin. H. A. Thies.—p. 2185.

Cortisone and Resistance Against Toxins of Tubercle Bacilli.—Soon after the introduction of cortisone, it became evident that latent tuberculous processes flared up during cortisone therapy in man and in experimental animals. Tonutti and Fetzer studied the influence of cortisone and desoxycorticosterone on the resistance of the organism against the toxins of the tubercle bacillus. The studies were made on 75 guinea pigs of both sexes and of the same strain, weighing from 300 to 350 gm. The hypophysis of 61 was removed from one to five weeks before the experiments were started. The tubercle bacilli toxins were introduced by daily intraperitoneal injections of 5 to 10 mg. of killed bacilli of the human and bovine types, 10 mg. being suspended in 1 cc. of sodium chloride solution. The bacilli were killed by heating to 120 C for 30 minutes. The guinea pigs were divided into several groups, some serving as controls and others being subjected to various modes of treatment with cortisone and desoxycorticosterone acetate. The resistance against the toxins of the killed tubercle bacilli was much less in the animals in which the hypophysis had been removed than in normal animals; treatment with desoxycorticosterone did not improve the reduced resistance of these animals but it became almost normal with cortisone treatment. It is necessary to differentiate two mechanisms in the action of cortisone on tuberculosis: Cortisone reduces the resistance against the dissemination of the living bacilli, but on the other hand, cortisone is indispensable for the development and maintanance of normal resistance against the toxins of the tubercle bacillus. If, in the therapy of tuberculosis, resistance has been lessened because of reduced adrenal cortex function, the necessity to improve this function will be particularly important if many tubercle bacilli have been killed by effective chemotherapy and the patient is threatened by the sudden increase in toxins. Cortisone should be used only when its second effect, the dissemination of bacilli because of inhibition of cellular defense reactions, no longer represents a danger because of the use of an effective chemotherapeutic agent.

Cardiac Anomalies in Mongolism.—In 245 cases of mongolian idiocy, 55 patients (nearly 23%) were found to have congenital anomalies of the heart. In 25 of these cases necropsy permitted exact identification of the cardiac anomalies. The anomalies showed a certain uniformity that had also been noted in earlier statistics. The classification of the various anomalies shows that it is justifiable to speak of a mongolism syndrome, the mild form of which is characterized by a combination of auricular septum defect, subaortic ventricular septum defect, and patent ductus arteriosus; in the severer form a common atrioventricular orifice was also present. The authors discuss clinical, roentgenologic, embryologic, and pathogenetic problems involved in these anomalies. They stress that the cardiac anomalies associated with mongolisms are largely defects in the septums, whereas stenosis and atresias were never seen in their cases and were rarities in other reports. The types of defects indicate that the cause is active over an extended rather than limited period during embryonal development.

Nordisk Medicin, Stockholm

48:1319-1358 (Sept. 26) 1952. Partial Index

Antihistamine Preparations in Motion Sickness. H. Diamant.—p. 1321.
Postoperative Nausea and Dimenhydrinate. P. Garsten and B. Odén. —p. 1324.
Treatment of Pneumonia. G. Omland.—p. 1327.
Cervical Spondylosis. Clinical and Roentgenologic Investigation. T. Børmer and E. Evang.—p. 1330.
*Immediate and Late Results of Operations for Goiter. C. A. Edvall. —p. 1334.
Megaesophagus. K. L. Hitze.—p. 1339.
Recurrent Facial Paralysis with Plicate Tongue and Facial Edema (Melkersson's Syndrome). L. Hambraeus.—p. 1342.

Results of Operations for Goiter.—Of Edvall's 515 cases of goiter operated on from 1941 to 1950, 335 represented thyrotoxicoses, 162 nodular and diffuse nontoxic goiters, and 18 more or less unusual forms of goiter. There were seven deaths among the 206 cases of exophthalmic goiter, or a mortality of 3.4%. The eighth operative death occurred in a case of malignant goiter. The frequency of toxicosis in a form resistant to preoperative iodine treatment was notable; here treatment with antithyroid preparations and roentgen treatment were also unsuccessful. The course was without complications in only one of the 16 patients resistant to preoperative iodine treatment, which included the fatal thyrotoxicosis cases. Follow-up examination of 317 patients from 2 to 10 years after operation showed 92.5% to be well. Of the remaining patients with residual or recurrent disorder, only three were seriously incapacitated.

48:1441-1480 (Oct. 17) 1952. Partial Index

Gas Gangrene. P. Hedlund.—p. 1442.
*Deficiency of Antipernicious Anemia Principle as Cause of Chronic Glossitis Without Megalocytic Anemia. P. Bastrup-Madsen.—p. 1444.
Desoxycorticosterone Medication in Convalescence After Electric Shock. K. Jacobsen.—p. 1448.
Gastrogenic Circulatory Deficiency in the Aged. E. Forsgren.—p. 1451.
Congenital Cerebellar Ataxia in Uniovular Twins. O. Scheel Thomsen. —p. 1453.
Ileal Intussusception with Aberrant Pancreas in Meckel's Diverticulum. J. A. Jensen.—p. 1454.
Freeze-Drying. P. Hedlund.—p. 1455.
Technique of Intra-Arterial Blood Transfusion. H. Baden.—p. 1457.
Artificial Kidney: III. Present Apparatus and Technique in Dialytic Treatment. N. Alwall and A. Lunderquist.—p. 1458.

Chronic Glossitis Without Anemia.—Bastrup-Madsen reports on five patients in whom glossitis was regarded as a manifestation of latent pernicious anemia although megalocytic anemia was absent. The lingual symptoms had lasted from 6 months to 15 years before the start of specific antipernicious anemia treatment. In three cases there were mild and in one case marked symptoms of combined sclerosis. In all cases there was histamine-fast achylia, with slight increase in the color index, hemoglobin values from 80 to 92%, and normal leukocyte counts. The bone marrow showed maturation disturbances in the myeloid series of the type seen in pernicious anemia. In all cases improvement in the lingual symptoms occurred from 5 to 10 days after specific treatment was begun, with complete disappearance of the symptoms in one of the three cases in which

liver treatment was given and in the two cases in which vitamin B_{12} was given. The color index approached 1. In the four cases in which the bone marrow was examined after specific treatment for two weeks the bone marrow picture had returned to normal. As in every other form of pernicious anemia, specific treatment once started must be continued. Interruption of the treatment may lead to the development of irreparable tongue and nerve lesions. The author concludes that as iron deficiency may cause mucosal changes without giving rise to anemia, absence of the antipernicious anemia principle may cause glossitis without accompanying anemia. Examination of the bone marrow may be a valuable diagnostic aid.

Philippine Medical Association Journal, Manila

28:383-434 (July) 1952. **Partial Index**

Measurements of Filipino Newborn Infants (Preliminary Report). Fe del Mundo, A. Cruz-Adiao and R. Carretero.—p. 383.
Typhoid in Pregnancy: Report of Case with Chloramphenicol and Corticotropin Treatment. M. M. Alimurung and C. P. Manahan.—p. 388.
Treatment of Minimal Pulmonary Tuberculosis. M. Quisumbing Sr. —p. 393.
Quantitative Determination of Chorionic Gonadotrophins in Hydatidiform Mole and Chorionepithelioma Using Male Philippine Frog. P. M. Cajipe and J. T. de la Paz.—p. 401.

28:435-494 (Aug.) 1952. **Partial Index**

Surgical Spleen and Splenectomy. J. Y. Fores, R. A. Teotico-Berriz, R. Juico and A. Tiongson.—p. 435.
Direct Intra-Cardiac Surgery Valvulotomy for Relief of So-Called "Pure" Pulmonary Stenosis. C. S. Yujuico.—p. 445.
Surgical Considerations in Nephrolithiasis. L. F. Torres Jr.—p. 454.

28:495-586 (Sept.) 1952.

Developmental Anomalies of Uterus: Report of 11 Cases. H. Acosta-Sison and L. C. Jose.—p. 495.
Ineffectiveness of Chloroguanide in Amebic Dysentery. C. Dayrit, N. S. Vargas and A. Baltazar.—p. 506.

Practitioner, London

169:479-584 (Nov.) 1952. **Partial Index**

Carcinoma of Rectum. C. N. Morgan.—p. 483.
Ulcerative Colitis. W. I. Card.—p. 493.
Treatment of Haemorrhoids. I. Fraser.—p. 499.
Diverticulosis and Diverticulitis. A. H. Douthwaite.—p. 505.
Care of Colostomy. C. A. Birch and T. M. Pemberton.—p. 509.
Chronic Constipation in Children: With Particular Reference to Hirschsprung's Disease. M. Bodian.—p. 517.
Cortisone in Treatment of Eye Diseases: Clinical Report. J. Minton. —p. 530.

Presse Médicale, Paris

60:1395-1414 (Oct. 18) 1952. **Partial Index**

Anticoagulant Treatment of Myocardial Infarct and Refractory Angina Pectoris. J. Lenegre and J.-L. Beaumont.—p. 1395.
*Pruritus in Erythremia. L. Brumpt.—p. 1397.
*Prevention and Treatment of Mumps Orchitis. R. Crosnier.—p. 1398.
Recent Improvements in Microscope. D. Kayser.—p. 1399.

Pruritus in Polycythemia Vera.—The existence of pruritus as a symptom of polycythemia vera was disclosed by a patient in whom ancylostoma were being used therapeutically. He had attacks of itching for which he blamed the parasites, but investigation showed that he had had similar attacks before the treatment. Pruritus has since been found in 22 of 30 patients with polycythemia; only a purplish discoloration of the skin and splenomegaly were more frequent. It is sometimes the first sign of polycythemia, appearing before the condition is recognized, and may occur during the day, after eating, during work if the patient is perspiring, or, oftenest, at night, as soon as the patient lies down or in his first sleep. It is rarely spontaneous, usually being provoked by heat, particularly hot or tepid water used for bathing; the reaction following the use of cold water sometimes has the same effect. Many patients blame their soap and change brands in vain. Whether the itching is local or general depends on the hygienic habits and the extent of the ablutions; footbaths have a marked effect. The areas chiefly affected are the forearms, thighs, chest, and back, especially between the shoulder blades. The sensation is variously described as burning, tingling, or pricking; some patients believe they have hives, although examination of the skin shows only redness. The itching, which may be so intense as to be intolerable, is relieved by cold, application of ether or eau de Cologne, or moderate physical exercise. Pomades and powders are not effective. Scratching usually prolongs and aggravates the itching, which otherwise generally ends spontaneously in about a quarter of an hour. Attacks recur under the influence of the same stimuli and vary in intensity according to the degree of polycythemia, disappearing when the polycythemia is treated and reappearing with relapses. They are more frequent in summer. Fear of itching may cause secondary symptoms such as thermophobia and claustrophobia. Vasomotor changes dominate the pathogenesis: the capillaries, overloaded with red cells, have difficulty in maintaining their tonicity in normal conditions; when vasodilatation is caused by heat, they become distended and pruritus follows.

Prevention and Treatment of Mumps Orchitis.—Recent advances warrant the conclusion that mumps orchitis can be prevented and that even if it appears it can be cured without appreciable sequelae. Prophylactic measures include absolute bed rest for at least 10 days in all cases, because attacks of mumps that are apparently abortive may be unexpectedly complicated by orchitis; a diet of milk, purees, stewed fruit and possibly an increase in protein should be given, as well as convalescent serum (40 cc. intravenously in one or two injections), which should be used within the first 48 hours of the infection, before the virus becomes fixed. The gamma globulin fraction of convalescent serum has been shown to give superior results and may be used when available. Synthetic estrogens have greatly modified the development of orchitis and play an active part in its prevention. The following scheme of treatment may be used for prophylaxis: diethylstilbestrol, 2 or 3 mg. for 10 days; hexestrol ("cycloestrol"), 2 or 3 mg. for 10 days; and dienestrol ("cycladiene"), 1 or 2 mg. for 10 days. Estrogen treatment should begin as soon as parotitis appears, because the sooner it is given the more certain it is to prove effective. When it is not given until some days later, the orchitis may not be prevented but it will be less severe. Treatment for 10 days is better than treatment for 5 days even with doubled doses, because the entire critical period preceding the possible development of orchitis should be covered. In some cases estrogen administration may even be continued for 15 days. No mammary reactions have been observed in patients treated according to this scheme. Curative treatment requires administration for 10 days of 5 mg. each of diethylstilbestrol and hexestrol and 3 mg. of dienestrol. Orchitis is arrested as soon as treatment begins, and when unilateral at the outset, it rarely becomes bilateral if estrogen administration is started promptly. Treatment should not be discontinued before 10 days, even when improvement is striking; only in exceptional cases should it be extended to 15 days. Mammary reactions do not occur even with these increased doses. Mastitis or ovarian disturbances accompanying mumps in women may be treated with testosterone. Lumbar sympathetic infiltrations may be used in connection with estrogens when orchitis has developed in spite of prophylactic measures. Sequelae rarely follow when estrogens have been adequately and promptly used; if functional disturbances occur, they may be successfully treated with multiple hormones (gonadotropic hormone and testosterone).

60:1447-1470 (Oct. 25) 1952

Pathogenesis of Isolated Tubercles in the Lung: Tuberculomas and Infiltrates from View Point of Surgical Interventions. P.-F. Armand-Delille.—p. 1447.
Psychosomatic Study of Cystalgia Associated with Clear Urine. P. Aboulker and L. Chertok.—p. 1448.
Nerve Lesions and Cutaneous Allergy to Tuberculin; Interpretation of Results of Tuberculin Test and Discussion of Its Biological Value. B. Nardone.—p. 1450.
*Anticoagulant Treatment in Myocardial Infarction. G. Michaëlidès, H. Tsévrénis and D. Avgoustakis. —p. 1452.

Anticoagulant Treatment in Myocardial Infarction.—Blood coagulation studies were made in 30 patients with coronary thrombosis resulting in myocardial infarction who were given anticoagulant treatment with ethyl biscoumacetate (tromexan®) or with heparin combined with bishydroxycoumarin (dicumarol®). Repeated electrocardiograms were taken. Heparin was given intravenously in doses of 100 to 150 mg. every four hours. Bishydroxycoumarin was given simultaneously with heparin and the initial dose varied from 400 to 600 mg. Ethyl biscoumacetate

was given in doses of two to four 300 mg. tablets in 24 hours. The doses of the anticoagulants were regulated in the individual patient according to the results of the Quick prothrombin test and of Soulier's modified in vitro tolerance test to heparin. These two tests were performed regularly every second day and occasionally every day for 20 to 40 days. Initial hypercoagulability was observed in all the patients. Early hypocoagulability seemed to be inconstant and of short duration. Anticoagulant treatment therefore was continued until the phase of late hypocoagulability was manifested, and that occurred between the 20th and 40th day of the disease. In the course of this phase a moderate decrease in the prothrombin level occurs and is associated with an increase in the in vitro tolerance to heparin. The appearance of late hypocoagulability is a safer guide than the erythrocyte sedimentation test for the determination of the date of the absorption of the myocardial infarct and of its relative cure. Not a single thromboembolic complication was observed in the authors' patients; it is concluded that anticoagulant therapy completely prevents these complications. Mild hematuria was observed in one patient, and hemoptysis occurred once in another. Three of the 30 patients died within two months following the infarction; one of the three died of acute pulmonary edema and the two others of syncope. The electrocardiograms taken in the course of the anticoagulant treatment suggested that this therapy either prevented the appearance of or limited the ischemic changes associated with obstruction of the coronary arteries. Consequently the prognosis of myocardiac infarction seems to be favorably influenced by this treatment provided that it is controlled by the two tests mentioned before.

Proceedings of Royal Society of Medicine, London

45:641-740 (Oct.) 1952. **Partial Index**

Modern Views on Prevention of Tetanus in the Wounded. B. A. Sachs. —p. 641.
Effect of Added Vaccines on Diphtheria Antitoxin Production. J. Ungar. —p. 674.
Patent Ductus Arteriosus. D. Browne.—p. 719.
Portal Venography. A. H. Hunt.—p. 722.

Sang, Paris

23:629-716 (No. 8) 1952. **Partial Index**

*Study of Effect of Thiouracil in Certain Cases of Leukemia. J. Bernard, G. Deltour, E. Velez and D. Christol.—p. 629.
Relation Between Kunkel Test for Gamma Globulin Carried Out on Placental Blood and Weight of Child at Birth: J. Choukroun and J. Badin.—p. 653.
Spleen in Heart Diseases. R. Jacquot.—p. 660.
Chronic Erythroblastosis with Osteosclerosis in the Adult: Attempts at Treatment with Parathyroid Hormone and Dihydrotachysterol. R. Cattan, P. Frumusan and G. Bilski-Pasquier.—p. 664.
Infectious Mononucleosis with a Granulocytic Hemogram. J. Mallarmé, Meng, Cadoret and M. Musy.—p. 672.
Hodgkin's Disease with 20 Years' Benign Evolution. A. Gajdos.—p. 683.
*Four Cases of Hodgkin's Disease Treated with Colchicine. P. Isch-Wall. —p. 689.

Effect of Thiouracil in Leukemia.—The effect of thiouracil was studied in five cases of chronic myeloid leukemia, three cases of chronic lymphoid leukemia, and one case of acute leukemia. Tolerance for the drug was good, even in large doses (400 mg. daily), for several months. Results were inconclusive but important. Transient improvement was noted in three patients with chronic myeloid leukemia, in one of whom the number of leukocytes dropped from 191,500 to 6,000 per cubic millimeter, only to rise again within 10 days. A second course of thiouracil proved ineffective. The other patients derived little or no benefit from the treatment. The practical value of thiouracil in leukemia is very limited, but examination of its effects suggests a possible direction for further investigation. Changes in thyroid and adrenal cortex function and evidences of central and peripheral hematopoietic action were investigated in an effort to determine the mechanism by which thiouracil acts. Analysis of the results obtained supports the belief that it acts directly on the blood cells, either centrally on granulopoiesis or peripherally on granulocyte metabolism. Reports of agranulocytosis caused by antithyroid drugs are numerous, and there is evidence to show that the granulocytes are the cells most sensitive to the action of thiouracil. The manner in which this action is exercised is not yet clear, but a study of compounds possessing a structure similar to that of thiouracil, i. e., homologues or isologues with a pyrimidine nucleus and having a free S= or SH- function, should prove valuable. No compound has yet been found that can restore the disturbed metabolism of the myelocyte; consequently, a search for antimetabolic agents of the pyrimidine or homologous series apparently holds more promise than the discovery of new mitotic poisons, which arrest normal as well as pathological cell development.

Four Cases of Hodgkin's Disease Treated with Colchicine.—Treatment of Hodgkin's disease with colchicine is easily carried out, involves little danger, and provides symptomatic relief. Rapid decline in temperature, regression of glandular swelling, and improvement in the general condition enabling a bedridden patient to resume his occupation were observed following three weeks of treatment in which colchicine alone was given intravenously in doses of 3 mg. every three days. Similar results were later obtained in three other patients. The almost specific action of colchicine as a mitotic poison has hitherto passed virtually unperceived because it is usually given concurrently with x-ray treatment as a means of increasing sensitivity to the x-rays and the improvement noted has been ascribed to the irradiation. Resolution of the lymphadenopathy and the granulomas generally was proved in the first case not only by reduction in their volume but also by the results of exploratory puncture after two weeks of treatment. Hyaline fusion of all the elements of the granulomatous tissue, producing a formless mass without recognizable cells, was observed, and later, in a second biopsy, caseation tissue was recovered from a gland in the groin. From 20 to 30 injections should apparently be given in a series, although 10 were sufficient in the first case. The number of red cells and the leukocyte formula were not affected, except for a drop in the number of leukocytes from 6,000 to 3,000 (without agranulocytosis) in one of two patients who had a recurrence of symptoms. Both patients with recurrences obtained relief when treatment with colchicine was reinstituted.

Scandinavian J. of Clin. & Lab. Investigation, Oslo

4:167-250 (No. 3) 1952. **Partial Index**

Fibrinolytic Activity of Urine. I. Bjerrehuus.—p. 179.
Turbidimetric Determination of Diastase in Serum and Plasma with Dextrin as Substrate. H. Hansen and L. Jacobsson.—p. 183.
Cholesterolytic Property of Human Serum. M. Faber.—p. 198.
Dye Flotation in Human Blood. G. Östling and W. Nyberg.—p. 201.
Blood Heparinoid Substances in Human Atherosclerosis. E. A. Nikkilä and S. Majanen.—p. 204.
*Variations in Cell Content and Chemical Composition of Human Blood Due to Age, Sex and Season. B. Josephson and G. Dahlberg.—p. 216.
Effect of Nutrition on Blood Count and Chemical Composition of Blood. B. Josephson, G. Dahlberg and G. Tötterman.—p. 237.

Blood Changes Due to Age, Sex, and Season.—The studies described were made on healthy subjects, 527 men and 195 women, ranging in age from 16 to 80 years. The blood platelet count was considerably higher in young women than in men of the same age, but with advancing age, this difference was eliminated, as the number increased in men but decreased in women. The uric acid level rose with increasing age, while the creatinine level decreased. The total cholesterol was lower in persons more than 70 years of age than in younger persons. The bilirubin concentration, which was higher in men than in women, decreased continuously with advancing age, whereas the thymol turbidity increased. The alkaline phosphatase was lower in young women than in men, but increased with age until the difference was eliminated. It was higher in autumn than in spring. The blood chloride concentration was higher in women than in men. In both it sank considerably with advancing age. It was higher in spring than in autumn. The phosphate phosphorus, which had the same concentration in men as in women, also sank considerably with advancing age. The serum calcium was higher in spring than in autumn. The difference between the serum iron concentration of men and that of women was pronounced only in aged persons. In both sexes the concentration decreased with age. The serum potassium level, which was higher in young men than in women,

rose in both sexes with age, while the serum sodium level sank. The causes of some of the differences found are discussed; other differences seem inexplicable. Possible sources of error in the results are also discussed.

Semaine des Hôpitaux de Paris

28:3133-3174 (Oct. 22) 1952. **Partial Index**

Variations in Plasma Proteins in Course of Hepatic Diseases. M. F. Jayle and J. Vallin.—p. 3133.
*Studies on Diabetic Ketosis and "Acidoketosis": Definition and Limits of Diabetic Coma: Elements of a Terminology. E. Azérad and H. Lestradet.—p. 3139.
Differential Anthropology and School Life. E. Boltanski.—p. 3150.
Biochemistry of Diseases of Hemolymphatic System. R. Boucher, J. Sternberg and L. Trempe.—p. 3157.

Diabetic Ketosis and Acidosis.—Diabetic coma is apparently the final phase of a more extended process. The premonitory phase or precoma is important and should be considered with the coma proper because the deeper the "sleep" the less likely is therapy to succeed. Clear differentiation of simple ketonuria, precoma, and coma is difficult because of the insidiously progressive character of the disturbances. The question is, at what moment does a patient reach the dangerous phase that leads to terminal coma, and, inversely, when can a patient be considered out of danger and by what sign? Dyspnea, recognized as the most important clinical sign of severe ketosis, is a reaction to acidosis, which attempts to adjust the level of the carbon dioxide in the blood to that of the bicarbonates, but the reaction may be disturbed by other factors and this reduces its value as a sign. Comparison of the clinical and laboratory status of 46 patients with diabetic ketosis of varying severity, most of whom were in precoma or coma, showed the inadequacy as signs of certain factors such as ketonuria or even the carbon-dioxide combining power, and emphasized the value of others, such as ketonemia and the blood pH. The patients were classified according to their clinical condition as: (1) apparently normal; (2) presenting clinical symptoms (headache, dyspnea, nausea, or fatigue), but without even slight changes in consciousness; (3) showing more or less pronounced disturbances of consciousness (disorientation, somnolence, obnubilation, or torpor); and (4) completely unconscious. Twenty-one patients (7 adults and 14 children) were studied at the pediatric research center of Children's Hospital in Cincinnati and 25 (aged 20 to 84 years) were studied at the Hospital Beaujon in Paris; seven of the 46 died of the coma. No correlation was found between the degree of ketonuria and the state of consciousness. Ketosis depends on the ketone bodies retained in the body rather than on those excreted in the urine; measurement of ketonemia is therefore important. Acidosis and ketosis differ in their manifestations and effects and should not be confused; ketonemia alone does not show acidosis. There was an almost perfect correspondence between the blood pH and the state of consciousness in these patients. The pH drops when precoma begins, and the resulting acidosis is apparently one of the factors, if not the main factor, governing loss of consciousness. Cure should not be considered established until consciousness has not only been restored but the pH has also been brought back to about 7.4 and the ketone bodies have disappeared completely from the blood. Confusion in the classification of diabetic decompensation can be avoided by using the term ketosis when there is a significant increase in ketonemia but the blood pH is normal (regardless of the carbon dioxide combining power) and "acidoketosis" when there is a simultaneous increase in ketonemia and a decreased blood pH (again without regard to the carbon dioxide combining power), accompanied or not by disturbances of consciousness (precoma or coma). The term coma should be reserved for complete loss of consciousness.

Tubercle, London

33:321-350 (Nov.) 1952. **Partial Index**

Isoniazid in Treatment of Pulmonary Tuberculosis. E. G. Sita Lumsden and J. A. F. Swoboda.—p. 322.
Case of Recurrent Jaundice Due to PAS. J. H. Thomas.—p. 329.
Photofluorographic Survey of Out-Patients of General Hospital. F. A. Nash and J. B. Murray.—p. 332.
Place of Extrapleural Pneumothorax in Modern Treatment of Pulmonary Tuberculosis. P. E. Baldry, J. J. Sumner and R. Ł. Ward.—p. 336.

Zeitschrift für Urologie, Leipzig

45:617-664 (No. 10) 1952

*Changes in Prostate Carcinoma Tissue Following Treatment with Female Sex Hormones. R. Heusch.—p. 617.
Stones in a Double Ureter. K. Köster.—p. 656.
Cancer of Ureter. L. Koch and D. Heubner.—p. 658.
Myoma of Urinary Bladder. O. Adam.—p. 661.

Tissue Changes in Carcinoma of Prostate Following Hormone Treatment.—Heusch reviews his experiences with female sex hormone therapy in carcinoma of the prostate. At his clinic the patient is given daily intramuscular injections of 5 mg. of diethylstilbestrol dipropionate ("cyren B") for the first three weeks. Then for two weeks this hormone is given daily in doses of 2.5 mg. After that the hormone content of the blood is kept at a lower, more constant, level by implantation of compressed tablets of dioxydiethylstilbene ("cyren A"). With this treatment there was always a reduction in the consistency of the tumor, in the micturition difficulties, and in residual urine. There was also improvement in the blood picture, and all patients gained weight. Exacerbation of the clinical symptoms was never observed in the course of treatment. Histological studies were carried out on prostatic tissue obtained by electroresection in eight patients who had been treated with female sex hormone. On the basis of these studies the question whether cure of prostatic cancer can be obtained by heterosexual hormone therapy must be answered in the negative, although in some instances, biopsies made at various intervals revealed signs of degeneration in the carcinomatous tissue, such as vacuolization, pyknosis of nuclei, and general reduction in the vitality of the tissue. In other cases, however, no histological changes could be seen, in that after as well as before treatment there still was noticeable polymorphism of the cells, numerous mitoses, and continued infiltrative growth. The author admits that since the specimens were obtained by transurethral electroresection, only a small portion of the carcinomatous tissue was available for study. At any rate, there is a noticeable discrepancy between the histological and the clinical results of heterosexual hormone therapy in prostatic cancer.

Zentralblatt für Chirurgie, Leipzig

77:1601-1632 (No. 38) 1952. **Partial Index**

Value of Prolonged Anesthesia with Hexobarbital ("Evipan") and Curare. H. Jirzik.—p. 1601.
Retrosynovial Plastic Repair of Anterior Cruciate Ligament. F. Mommsen.—p. 1610.
*Studies on Pathogenesis of Intraspongial Disk Hernias. Z. Zsebök, B. Somogyi and S. Furka.—p. 1614.

Pathogenesis of Schmorl's Nodules.—Zsebök and associates attempted to clarify the pathogenesis of herniation of a nucleus pulposus into the cancellous tissue of an adjacent vertebrae. To determine the role of trauma and mechanical strain, they studied the bearing strength of the individual lumbar vertebrae from 30 spinal columns. They tried to find out whether the disk of cartilage that abuts on the terminal surface of the vertebral body acts as a protective dam only against infection and neoplastic proliferation or also provides protection against mechanical forces. The resistance to fracture of the end surface of the vertebral body was tested by means of weights. A table lists the average fracture values of the upper and lower end plates. The authors also comment on the mechanical principles involved in the weight bearing of the spinal column. They believe that it has been definitely proved that degenerative changes in the end plates of the vertebrae are of primary importance in the pathogenesis of this type of disk herniation. Trauma alone does not play an important part. The histological picture of the intraspongial hernia (Schmorl's nodule), which indicates a gradual penetration of the disk tissue into the cancellous tissue of the vertebral body, also supports this concept. It cannot be definitely disproved that an extreme load or trauma may not rupture the end plate and thus suddenly produce an intraspongial hernia, but the authors conclude that degenerative changes are of primary importance.

BOOK REVIEWS

Correlative Cardiology: An Integration of Cardiac Function and the Management of Cardiac Disease. By Carl F. Shaffer, M.D., F.A.C.P., Associate Professor of Clinical Medicine, Baylor University College of Medicine, Houston, Tex., and Don W. Chapman, M.D., F.A.C.P., Associate Professor of Medicine, Baylor University College of Medicine. Cloth. $9.50. Pp. 525, with illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1952.

It is difficult to classify this volume accurately, since the method of presentation of material on the heart is quite different from that commonly found in other texts. The authors appear adequately qualified by training and by teaching experience in the Baylor University College of Medicine. They state that their objective is to permit the student to understand the manifestations of the normal and abnormal cardiovascular system through simple, concise statements correlated with diagnostic illustrations. An attempt is made to present the differential diagnostic features of the various entities described. It is somewhat difficult, however, to follow the text, because of its sketchy outline form, and, after reading the book, one feels that he has scarcely obtained an adequate clinical picture of the diseases of the heart, despite the fact that all of them are discussed. A few minor errors appear; for example the word prone is used where it is obvious that supine is the position indicated. One is struck by the fact that the administration of digitalis is recommended in acute stages of rheumatic carditis with decompensation, since it is fairly general experience that such use is largely ineffective in the presence of active rheumatic disease. One would be inclined to question the basis for the statement that subacute bacterial endocarditis occurs in 10 to 25% of rheumatic heart disease patients; certainly the latter figure appears high. The influence of bicuspid aortic valves on the incidence of bacterial endocarditis is not stated, nor is the role of a patent ductus arteriosus. The variability of murmurs and their tendency to change during the course of subacute bacterial endocarditis is not sufficiently emphasized.

The book is profusely illustrated with diagrams that, for the most part, are clear and easily understandable, and references appear to be fairly adequate. The volume can be recommended for use in the teaching of medical students and should be especially valuable for the beginning student. It seems to accomplish its avowed purpose in a satisfactory, if original, manner, and the index appears comprehensive and easy to use.

Logan Turner's Diseases of the Nose, Throat, and Ear. Edited by Douglas Guthrie. Assisted by John P. Stewart, with collaboration of Charles E. Scott, et al. Fifth edition. Cloth. $8. Pp. 478, with 255 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; [John Wright & Sons, Ltd., 42-44, Triangle West, Bristol 8], 1952.

Previous editions of this book are well known to a middle-aged generation of English-speaking otolaryngologists. Under the editorship of Dr. Douglas Guthrie, this latest edition has been revised by a group of Edinburgh otolaryngologists after a lapse of 15 years. It is aimed at the senior medical student, the general practitioner, and the specialist who wish to review the essentials of the subject. New material and new illustrations have been added, and much obsolete material has been discarded. The sections dealing with anatomy are especially outstanding and valuable for teaching purposes. A short chapter deals with penicillin, streptomycin, and the sulfonamides; however, aureomycin and chloramphenicol are dismissed as being too new for assessment, and oxytetracycline ("terramycin") is not mentioned. New material on disorders of the voice, teaching the deaf, artificial aids to hearing, the fenestration operation, and endoscopy, to mention an important few, is included. It seems that a more thoroughgoing revision of the book and the inclusion of a bibliography would have contributed significantly to the maintenance of the high standards set forth in previous editions.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Sodium Metabolism in Health and Disease. By Douglas A. K. Black, M.D., M.R.C.P. Cloth. $2.75; 9s.6d. Pp. 79, with 4 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1952.

This small monograph was written in competition and awarded the Rogers Prize of the University of London. It is easy to read, since the original essay form has been retained. The author is lecturer in medicine at the University of Manchester and is well known for his investigations in the field of body fluid and electrolytes. The literature on sodium metabolism has been reviewed through 1950; important articles since then have been included as footnotes. The clinical features are supported by results of animal investigations.

The monograph is divided into four parts. The amount and distribution of sodium in the body, including bone, is briefly summarized. The presentation of the various factors regulating body sodium is excellent, especially the analysis and criticism of Homer Smith's hypothesis of sodium excretion by the kidneys. The third section, on normal physiology, deals with the internal circulation of sodium in the body. The last section discusses abnormalities of sodium metabolism, with special emphasis on the syndromes of salt depletion, water intoxication, generalized edema, and water depletion. In addition to the physiological and biochemical aspects of these abnormalities, the clinical features are also presented. Despite several typographic errors, the book is recommended as an easily read, well-documented, brief review of a complicated subject. For those unfamiliar with sodium metabolism, it will serve as an introduction to the subject.

The Oculorotary Muscles. By Richard G. Scobee, B.A., M.D., F.A.C.S., Assistant Professor of Ophthalmology, Washington University School of Medicine, St. Louis. Second edition. Cloth. $11. Pp. 512, with 159 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1952.

In this edition, the author has shown an increasing maturity and breadth of concept. The sections on physiology, especially as relating to retinal correspondence, the horopter, and the laws of Sherrington and Listing, have been rewritten, as has that on heterotropia; and extensive additions have been made in various other parts. The chapter on therapy has been extensively revised, and a final chapter on the causes of failure in tropia surgery has been added. This book is well written, and the difficult subject matter is handled with clarity and humor. As a textbook in a field of ophthalmology in which there exist legitimate differences of opinion, the views of the author are presented in a most convincing fashion. The work has great value not only to the resident and postgraduate student in ophthalmology but to the practicing ophthalmologist as well. The recent, untimely death of the author, who gave promise of becoming a leading authority in this field, was a catastrophe, but this book will long endure as a monument to his scientific acumen.

The American Academy of Orthopaedic Surgeons: Instructional Course Lectures. Volume IX. Edited by Charles N. Pease, M.D. Cloth. $10.75. Pp. 450, with illustrations. J. W. Edwards, 1745 S. State St., Ann Arbor, Mich., 1952.

This book consists of papers presented at the instructional course lectures of the 19th annual convention of the American Academy of Orthopaedic Surgeons held in Chicago in January, 1952. There are 26 papers, each by a different author. The subjects range from fundamental subjects in anatomy of the joints and gross osteopathology to technical descriptions of operations for surgery of the hand and the femur. There are series of lectures on spinal fusion, cerebral palsy, and braces. Included is a practical paper on treatment of poliomyelitis. The shoulder joint and the foot are discussed in several good articles. All of the authors are recognized authorities in their special fields. The book is well illustrated and has an excellent format.

Surgical Technique. By Stephen Power, M.S., F.R.C.S., Senior Surgeon to Dreadnought Hospital, Greenwich. Cloth. $6.50. Pp. 380, with 198 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5, 1951.

This book was written because the author, while a resident surgical officer, felt that a young surgeon's training was largely academic and that, although he became a Fellow of the Royal College of Surgeons, he frequently found himself ". . . knowing a great deal more about operations than about operating." The 29 chapters in this volume contain a good deal of sound advice that every house officer will appreciate. The discussions of the position of the patient on the operating table, the surgical approach, hemostasis, and other subjects are written with the aim of passing ripe experience on to others. This is especially true in the chapter on hemorrhage, which will be exceptionally helpful. In his discussion of the situation in which a ligature slips or a hemostat comes loose during a cholecystectomy and there is profuse bleeding from the hepatic artery or one of its major branches, the author suggests that the right edge of the gastrohepatic omentum be compressed between a finger in front and a thumb behind the foramen of Winslow. He might have gone further and suggested that the operator move to the left side of the patient, where it is much easier to carry out this maneuver. In writing about gastrointestinal sutures, the author has spelled Halsted incorrectly.

Power states that ". . . ten per cent of all clean surgical wounds become infected." While this may be true for the average run of surgical clinics, it probably is not true for the best of our surgical clinics. In the section on burns, the Bunyan bag is still recommended for certain burns in which the author considers irrigation by an antiseptic advisable. It is doubtful that a single American surgeon who has made a study of burns would now use this type of therapy. The section on burns might well be rewritten in the next edition, for coagulants and dyes are still discussed in this volume. In the discussion of shock, the author considers primary shock to be due to a reflex nervous phenomenon. Secondary shock, however, he believes is due to ". . . some poison which has been accumulating in the blood until it reached a sufficient concentration to upset the normal arrangements of the vascular system." The suggestion that ". . . an isotonic combination of glucose and saline is the safest for ordinary use" in the postoperative period, and even during operation, may get the patient into difficulties, especially if the patient is in shock and there has been some disturbance of renal function. Under these circumstances, excretion of the salt may be greatly different from that of the kidney that has not been exposed to a period of hypotension.

This volume should be read by junior house officers in surgery and then read again several years later, when their experience has increased. They will find that much of what has been written will be of real help. They will also find that a good deal of what has been written is not extensively utilized in our large American surgical clinics. This is always true when works from other countries are published in the United States for use here. Nevertheless, this book represents an effort to bring together a good deal of experience and a fine amount of sound thinking.

Anatomie und Physiologie: Lehrbuch für ärztliches Hilfspersonal. Von Professor Dr. med. Joseph Bücker. Seventh edition. Cloth. 16.50 marks. Pp. 152, with 90 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; [American agent, Grune & Stratton, Inc., 381 Fourth Ave., New York 16], 1952.

This is a textbook for ancillary medical personnel. Faultlessly printed, beautifully bound, and illustrated with excellent figures, many of them in color, this book makes an attractive volume. Both the text and the legends to the illustrations use Latin and German anatomic terms almost interchangeably, a fact that must entail considerable difficulty for many students. The physiological material is at least as important as the anatomic material, and, if well presented, sometimes proves much more interesting to the student; in this book, however, it is so scant that it almost escapes notice and is so laconic that it raises doubts as to whether it can be appreciated by the student without the help of an expert teacher. As a whole, however, the book covers the two subjects accurately and systematically, and it deserves the attention of writers attempting similar presentations in other languages.

The 1952 Year Book of Medicine (May, 1951-May, 1952). Edited by Paul B. Beeson, M.D., et al. Cloth. $6. Pp. 735, with 122 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1952.

This edition consists of a review of many important phases of internal medicine. No one volume could be expected to include all or even most diseases of current interest. It must not be considered as a textbook but rather as a fairly comprehensive reference volume brought up-to-date. In this capacity it should prove useful both to the general practitioner and to the internist. It embodies the experience and opinions, deductions and conclusions of many clinicians and teachers.

The book is divided into six parts, each part having a different editor. The high standards and qualifications of these editors render the book trustworthy and reliable. Part 1, on infections, was edited by Paul B. Beeson and is easily readable, simple, succinct, and yet amply comprehensive. Part 2, on the chest, by J. Burns Amberson, deals with most of the more commonly encountered diseases and anomalies and includes sketches and drawings both interesting and helpful. Part 3, dealing with the blood and blood-forming organs and edited by William B. Castle, merits special commendation. It covers a wide range of blood dyscrasias and includes case histories that are pertinent. Part 4, the heart and blood vessels and the kidney, by Tinsley R. Harrison, a man with wide experience both as a teacher and as a clinician, is so comprehensive it could easily be published as a monograph. Part 5, on the digestive system, was edited by George B. Eusterman. This contribution covers adequately the entire digestive system. It offers a wealth of material, both old and new, and is ably edited. Part 6 deals with metabolism and was edited by Robert H. Williams. This section concludes a volume replete with statistical and practical information. References to and discussion of corticotropin and cortisone are particularly helpful.

This year book of medicine offers the reader a wealth of important, current, and relative information for practical use in everyday practice. It provides this in simple, readable, and succinct form. Its index is complete, and it is ably edited.

A Text-Book of Pathology. By E. T. Bell, M.D. Contributors: B. J. Clawson, M.D., and J. S. McCartney, M.D., Professor of Pathology, University of Minnesota, Minneapolis. Seventh edition. Cloth. $12. Pp. 1008, with 534 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1952.

This edition of a well-known textbook on general pathology is what it claims to be: a medical student's text. It is not primarily a reference book, although many practitioners might find it a good review of the subject. The text consists of 30 chapters. The first 14 are introductory, in that they take up basic problems in pathology, including the various types of injury, tissue change, tumors, and inflammatory processes. The section on tumors covers the subject well and should stimulate the student's further interest. Sixteen chapters on the pathology of the various organ systems complete the book. They are, in general, a good introduction to the great mass of literature on these special subjects.

The greater part of the book is written by the senior author, with smaller contributions or revisions being accredited to three others. This makes for continuity and lack of repetition, as befits a student's text. The author often quotes cogent statistics from his own autopsy material. The references are limited in number and thus parallel the amount of time available to the student for outside reading. Many of the references are to earlier original work. The style of this book is simple yet erudite. Fine print and unnecessary discussion of theories are minimized. The binding, type, and printing are excellent, although some might prefer a somewhat less glossy paper. The illustrations are pertinent and well reproduced and include 46 new photomicrographs.

In his preface, Dr. Bell states that he hopes "the student will look upon clinical medicine as a direct continuation of his pathological studies and not as an abrupt entrance into a new field." There is an even more difficult transition for the student early in the study of pathology itself, when the material presented has attained sufficient volume to prove bewildering but has not attained sufficient form to be truly interesting. Dr. Bell's book should be a help to the student particularly in this earlier period and is recommended as such to teachers of pathology.

Farmacología y terapeútica. Por el Dr. Amado Ruiz Sánchez, profesor de farmacología y farmacología clínica en la Escuela de Medicina de la Universidad de Guadalajara. Leather. Pp. 1006, with 372 illustrations. Universidad de Guadalajara, Guadalajara, México, 1952.

Interest in modern pharmacology is increasing in Mexico. Dr. Ruiz Sánchez, of the University of Guadalajara, complements in a practical clinical manner the scientific texts of Dr. Francisco Guerra, of the University of Mexico, on experimental pharmacology (Mexico City, 1946) and on basic pharmacology (Mexico City, 1951). Dr. Ruiz Sánchez's book stresses practical therapeutic aspects of current pharmacology. As a reflection of the practical interests of Mexican physicians, it is to be noted that discussions of antibiotics and hormones occupy about half the volume, and vitamins are covered in another 100 pages. Cardiac drugs, on the other hand, are allotted merely 20 pages, while general and local anesthetics are disposed of in 5 pages. Nevertheless, the volume is well organized and well documented. The antibiotics are handled comprehensively and in great detail, and hormones are considered in much greater detail than would be considered appropriate to a pharmacology text in this country. Emphasis on vitamins as drugs is an indication of a wholesome trend. Of particular interest is a full chart, analyzing the major foods of Mexico for protein, carbohydrate, mineral, and vitamin content. The book contains a useful clinical summary of the drug management of blood disorders, of diuretics, and of chemotherapeutic agents. There is a fair consideration of central nervous system stimulants and depressants, of autonomic drugs, of drugs acting on the gastroenteric tract, and of antiseptics. Antihistaminics, biological preparations, and drugs acting on the skin are also included. While there is some discussion of general principles of pharmacology, there is little on diagnostic drugs, or on toxicity. The volume should be a real help to the practicing physicians of Mexico. It is adequately indexed.

Principles of Hospital Administration. By John R. McGibony, M.D., Medical Director; Chief, Division of Medical and Hospital Resources, Bureau of Medical Services, U. S. Public Health Service. Cloth. $6.80. Pp. 540, with illustrations. G. P. Putnam's Sons, 210 Madison Ave., New York 16, 1952.

Dr. McGibony has made available to the hospital field the results of his own long experience and interest in hospital administration. The book also contains material selected from many sources, e. g., the publications of the Public Health Service and the American Hospital Association. The arrangement and interweaving of these additional data provide a well-integrated text on hospital planning and administration. The book discusses essential elements in planning for facilities and fundamentals of hospital design and construction. The importance of sound organization is emphasized in the chapters on the incorporation of the hospital itself, the structure of the governing board, and the organization of the medical staff. The actual operation of the hospital is discussed in two sections: the first on the management services, business office, personnel, purchasing, and plant maintenance, and the second on the clinical services, medical care, nursing, pharmacy, medical records, and the outpatient services. Hospital administrators and other hospital personnel will find in this book a guide to effective administration and a usable reference source for help with hospital problems. To members of medical staffs, Dr. McGibony has presented a clear-cut outline of the hospital's functions and services, stressing the focal point, the care of the patient.

Man Against Cancer: The Story of Cancer Research. By Dr. I. Berenblum. Cloth. $3. Pp. 182, with 14 illustrations. Johns Hopkins Press, Homewood, Baltimore 18, 1952.

The author in simple, virtually nonmedical language explains the facts known about cancer. Obviously this book is written with a lay audience in mind. The nature of cancer, its frequency, factors influencing its occurrence, its diagnosis, and its treatment are rapidly sketched. The section on early experimental studies is particularly excellent, since it clearly indicates the development of the modern concept that cancer is a deviation in the normal growth processes of the cell. This material would be of particular value to physicians in discussion with the laity of various recurrent false theories regarding the nature of cancer. It is a good book to recommend to the intelligent patient with a desire to acquire authoritative information on cancer.

Reaction to Injury: Pathology for Students of Disease. Volume II: The Reactions of Submission and Adaptation and the Disease Entities Arising out of Their Elaboration. By Wiley D. Forbus, M.D., Professor of Pathology, Duke University, Durham, N. C. Cloth. $20. Pp. 1110, with 836 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

This volume contains parts 3 and 4 of the author's comprehensive text in the field of pathology. Whatever may be the approach, the essentials of textbooks in pathology are clarity, definition of purpose, and adequacy of material content in both general and special pathology. These are the objectives that Forbus wishes to realize. An attempt to present an orderly approach to so large a field causes difficulties in organization, and with the view of breaking from tradition, an author may choose to present his exposé as an individualist. This can be said of Dr. Forbus' text.

Part 3 of the book concerns "the submissive reaction to injury and the disease entities arising therefrom—disturbances in metabolism and function with and without structural alteration of the tissues." The first section discusses the cellular changes of tissues commonly designated as retrogressive, including endogenous and exogenous pigmentations; tissue injuries by poisons, such as plumbism, poisoning by carbon monoxide, cyanide, the heavy metals, mushrooms, phosphorus, the alcohols, ether and chloroform, strychnine, animal and vegetable poisons, and noxious gases; and tissue changes due to local circulatory disturbances, hemorrhage, thrombosis, embolism, and infection. Section 2 of part 3 discusses disturbances in organic and systemic function and metabolism, such as deficiency diseases of nutrition, hypovitaminosis and hypervitaminosis, forms of hepatitis and cirrhosis, disturbances in fat and lipid metabolism, gout, amyloidosis, disturbances in protein metabolism, deficiency and other forms of anemia, polycythemia, and disturbances in the function and metabolism of the endocrine glands. Section 3 of part 3, concerning disturbances in function and metabolism related to growth and development, discusses the elements concerned with the normal growth processes in the prenatal period, congenital malformations, those of the postnatal period, the leukemias, lymphosarcomas, chloroma, agranulocytosis, and neoplasms.

Part 4 discusses the reaction of tissues to injury through adaptation in the heart and circulatory system, the respiratory system, duct obstruction of glands of external secretion, various forms of disorders of the gastrointestinal tract, the urinary tract, and of the central nervous system. The form of presentation of the material in this book may not please all pathologists and may seem confusing to students unless they are oriented in the manner of thinking of Dr. Forbus. The amount of pathological material presented, however, is large and covers a wide range of general and special pathology. Dr. Forbus deserves to be complimented on his achievement, and the book is recommended to students of pathology and to pathologists.

Microscopic Histochemistry: Principles and Practice. By George Gomori, M.D. University of Chicago Committee on Publications in Biology and Medicine. Cloth. $6. Pp. 273. University of Chicago Press, 5750 Ellis Ave., Chicago 37; Cambridge University Press, 200 Euston Rd., London, N.W.1; W. J. Gage & Co., Ltd., Toronto 2B, Canada, 1952.

This volume was written to serve as a textbook of histochemistry, a borderline field between analytical chemistry and histology. The subjects discussed are limited to those techniques in which the chemical reaction used in identification can be observed through the microscope in tissue that has not been grossly altered. The book is divided into two sections, the first including a brief general discussion of histochemical methods and the second giving detailed procedures for the localization and identification of specific substances. The substances identified are subdivided into inorganic and organic materials and enzymes. The practical section of the book is not limited to a specific detailed procedure for localization and identification of a particular substance but also includes discussions on other methods that have been attempted, the limitations of the methods, and the possibilities for modification and extension. The book contains author and subject indexes, bibliographic references, and an additional reference section. The volume will be useful to research workers, instructors, and students in the field of histochemistry because of its practical content and its collection of references.

Synopsis of Obstetrics. By Jennings C. Litzenberg, B.Sc., M.D., F.A.C.S. Fourth edition revised by Chas. E. McLennan, M.D., Professor of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco. Cloth. $5.50. Pp. 378, with 157 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1952.

In contrast to the 1947 edition, this edition has had the benefit of good editing, which brings out the excellence of the author, a great obstetrician and a remarkable teacher. The Litzenberg book prepared by McLennan is again an excellent synopsis. The book carries out its original purpose, to provide an illustrated and somewhat amplified lecture outline for the medical student and for others needing a brief survey of obstetrics. Some of the major discussions, especially those dealing with the early life of the ovum, endocrine physiology, Rh immunization, regional anesthesia, roentgen pelvimetry, and the toxemias of pregnancy, have been completely rewritten. As in the previous edition, nearly all illustrations have been borrowed or redrawn from other sources; however, all of them are clear and instructive.

McLennan points out that, while therapeutic abortion has been performed occasionally to avoid the possibility of birth of an afflicted child in a woman who had rubella in the first trimester of pregnancy, the validity of this indication for terminating pregnancy is still being debated. In his opinion there is no need to classify the toxemias of pregnancy, because there is really only one item in the classification. This item is a disorder peculiar to pregnant and puerperal women that is characterized by hypertension, edema, proteinuria, and occasionally by convulsion and coma. The nonconvulsive form is called preeclampsia, and when convulsions or coma are superimposed, the disease is called eclampsia. The use of the Braxton Hicks' version to prevent hemorrhage in placenta previa is described and illustrated, but this maneuver is being used less and less frequently in favor of rupture of the membranes and cesarean section. The author has succeeded in making this book an excellent companion volume of the large textbooks of obstetrics.

Connective Tissues: Transactions of the Third Conference, February 14-15, 1952, New York, N. Y. Edited by Charles Ragan. Sponsored by Josiah Macy, Jr., Foundation. Cloth. $3.50. Pp. 166, with 50 illustrations. Josiah Macy, Jr., Foundation, 16 W. 46th St., New York 36, 1952.

This third Macy conference on connective tissues continues the thought-provoking patterns of its predecessors. The addition of electron microscopy study has shed additional light on the fine structure of connective tissue suggesting that the striations seen in the fibrils are actually threadlike bands enveloped in a ground substance. Two threads are usually seen in each striation, but occasionally a third is visible between the pairs. Reconstituted collagen precipitated from acid solutions by use of citrate and sodium chloride buffer systems of varying pH resembled collagen from tissues in the spatial arrangement of the striae. Both the 210 Å and the 650 Å collagen fibrils can be precipitated from the same solution under suitable physicochemical conditions.

The discussion on hypersensitivity and the hyperadrenal state resulted in much comment, with final agreement that the gap between cytochemistry and morphology must be closed before rapid progress in this field may be anticipated. The conference is oriented to the level of the research scientist but contains much basic physiological and biochemical information for the internist interested in the diseases of connective tissue.

For Boys Only: The Doctor Discusses the Mysteries of Manhood. By Frank Howard Richardson, M.D. Cloth. $2.75. Pp. 91. Tupper and Love, Inc., 1090 Capitol Ave., S.E., P.O. Box 5109, Atlanta, Ga., 1952.

Although there is a slightly belabored attempt to present the principal character (a physician) in this small volume as a fatherly "buddy" or pal, nevertheless the advice presented is excellent and is given in interesting and understandable language. Much of the supposed dialogue between the physician and his schoolboy friends would never be encountered in real life, but the topics discussed are unquestionably of real interest and concern to adolescent youths. Most of the 15 chapters deal with sex matters, but one contains excellent consideration of the danger of mixing alcohol and gasoline and another provides helpful hints on getting along with father. This volume can be heartily recommended by physicians to parents of adolescent boys.

Claude Bernard & the Experimental Method in Medicine. By J. M. D. Olmsted, Professor of Physiology at University of California, Berkeley, and E. Harris Olmsted. Volume in Life of Science Library (no. 23). Cloth. $4. Pp. 277, with portrait. Henry Schuman, Inc., Publishers, 20 E. 70th St., New York 21, 1952.

The authors are well qualified to undertake the task of writing a biographic sketch of Claude Bernard. Dr. J. M. D. Olmsted is well known for his earlier, excellent biography of Claude Bernard. E. Harris Olmsted, a specialist in her own field, has contributed some excellent material that deals with the philosophical matters discussed in this book. The subject matter includes the scientific discoveries of Claude Bernard and how they were obtained. Chapters relate his discovery of glycogen, the liver as a source of sugar, his work on curare, glycogenesis, and vasomotor nerves. The authors' style of presentation is interesting and accurate, and one gets the feeling of participating in the experiments of Claude Bernard.

Emphasis has been placed on the thoughts of this great scientist concerning experimental medicine. The influence of François Magendie on the scientific life of Claude Bernard has been brought out very adequately, and the authors have shown which of his scientific ideas were inherited from Magendie. On the whole, this is a delightful presentation of the life of Claude Bernard, and it is recommended to anyone interested in the experimental basis of medicine.

Basic Principles of Cancer Practice: A Book on Diagnosis, Prognosis, and Treatment of Human Neoplasms for the General Practitioner and Medical Student. By Anderson Nettleship, M.D., F.A.C.P., Professor of Pathology, University of Arkansas School of Medicine, Little Rock. Cloth. $7. Pp. 398, with 106 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

This volume is written primarily for the general practitioner or medical student and attempts an exposition of the basic principles in the diagnosis, prognosis, and treatment of cancer. The author, recognizing the complexity of his task, dedicates himself chiefly to the indoctrination of the medical profession in the techniques necessary for early diagnosis and most successful treatment. There is also a discussion of the clinical behavior of neoplasms, their local and systemic effects, and the recognized methods of treatment at the various stages of development. The principal neoplasms occurring in children and in the organ systems and the effects of cancer research on clinical practice are also considered. Much information that is worth-while to the average physician is condensed into this treatise. Its commonsense attitude will aid practitioners in interpreting to patients and to families the clinical outlook in cancer.

La apendicitis en la infancia. Por L. Gubern Salisachs. Cloth. 110 pesetas. Pp. 334, with 102 illustrations. José Janés, editor, Muntaner 316, Barcelona, 1951.

Correct and prompt diagnosis of acute appendicitis in the infant is a most difficult problem. To help in this task, the author has compiled numerous clinical histories with examples of the many aspects under which acute appendicitis may be concealed. The book contains 21 chapters, with a bibliography at the end of each. All the chapters are very instructive, but those dealing with physiopathology and diagnosis are particularly helpful. These are highly recommended: the first because of the exhaustive way in which the syndrome, with its signs, the manner in which they can be recognized, and the rationale behind them is exposed, and the second because of the numerous examples and illustrations that are provided. The book is written in Spanish.

Diseases of the Ear, Nose, and Throat: Principles and Practice of Otorhinolaryngology; Clinical Technics and Procedures. By Francis L. Lederer, B.Sc., M.D., F.A.C.S., Professor and Head of Department of Laryngology, Rhinology and Otology, University of Illinois College of Medicine, Chicago. Sixth edition. Cloth. $20. Pp. 1430, with 979 illustrations. F. A. Davis Company, 1914-16 Cherry St., Philadelphia 3, 1952.

This book has been revised extensively to include new chapters on general pathology, allergy, ophthalmology, roentgenography of the head, disorders of speech, and psychiatry. The information it contains is voluminous. Many of the illustrations are excellent, and the binding and printing are attractive. Unfortunately, in this edition, as in previous ones, a bibliography is lacking.

QUERIES AND MINOR NOTES

COMMERCIAL GAMMA GLOBULIN AND POLIOMYELITIS PROPHYLAXIS

TO THE EDITOR:—*Is there sufficient gamma globulin contained in commercial "immune globulin" to render the latter suitable for trial use in the prevention of poliomyelitis?*

John M. Collins, M.D., Affton, Mo.

ANSWER.—Commercial "immune globulin" prepared for measles prophylaxis is essentially the same as Red Cross gamma globulin with respect to gamma globulin and measles antibody content. In poliomyelitis prophylaxis, only the antibody content for the three immunologic types of poliomyelitis virus is of importance. They may not correlate with gamma globulin or measles antibody content. Gamma globulin made from the plasma of susceptible persons would afford no protection. As far as can be determined, no commercial product has been assayed for poliomyelitis antibodies for all three types of virus; therefore, the effectiveness of such products is unknown. Until each lot of gamma globulin is assayed by some standard method and the results expressed in some standard units of antibody for each type of poliomyelitis virus, effectiveness in poliomyelitis prophylaxis can be expected to be irregular and unpredictable. At present, our knowledge is limited to the fact that passively transferred antibody, when present in an adequate amount for the specific type of virus to which the person has been or will be exposed, will afford protection, within certain limits. A dose of 0.14 cc. per pound body weight of several different lots of Red Cross gamma globulin prepared from very large pools of World War II plasma, representing many geographical areas, has had such an effect. Commercial gamma globulin is usually made from smaller pools of plasma from more limited geographical areas, so greater variations in titer from lot to lot from the same or different company may be expected.

IONTOPHORESIS

TO THE EDITOR:—*What is the major field of the usefulness of iontophoresis? How effective is this type of therapy?*

Paul Russell, M.D., Inglewood, Calif.

ANSWER.—The introduction of a medicament into the body by common ion transfer has limitations. Small quantities of ions can be introduced, because of the low potentials that are used and the low velocity of the ions. Only superficial penetration occurs; it is possible, however, that ions entering the skin or mucous membranes may be absorbed into the blood and produce generalized effects. Many authors have reported on introduction of histamine and methacholine by transfer in order to bring about hyperemia; however, simpler methods of producing hyperemia are readily available. The use of the transfer of heavy metal ions in gynecologic conditions, especially cervicitis, is not nearly as prevalent as it was several years ago. The transfer of positive ions in otological conditions, has also been used. These are methods of cauterization and, in general, are no more effective than other methods, such as the surgical or chemical ones. The use of ion transfer in treating certain types of arthritis is not commonly used, because other adjunctive methods of physical treatment are available that produce as good, if not better, results. Ion transfer is extensively used in Europe for ophthalmological purposes, but it is little used in this country. Such substances as zinc sulfate, copper sulfate, quinine, and penicillin and other antibiotics have been administered. The need to use ion transfer in applying drugs to the eye, which readily absorbs these drugs without the aid of ion transfer, is doubtful. As long as some patients respond favorably to this form of therapy, it probably will not be discarded.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PARENTS AS BLOOD DONORS TO THEIR INFANT

TO THE EDITOR:—*Please comment on the transfer of the blood of either parent to their infant and on the legal requirements for a serological test for syphilis prior to the transfer of the blood. 1. When does the newborn infant legally become a person separate from its mother, so that a valid blood test for syphilis is required prior to administration of the mother's blood to the infant? 2. Which tests are acceptable for such a purpose by the courts? 3. To the best of my knowledge, none of these tests rules out recent syphilitic infection; which one would make possible its earliest detection? Does the law permit either parent or both to waive, in writing, the requirement of a blood test prior to such a transfusion that is not an emergency measure?*

R. J. Kent, M.D., Savannah, New York.

ANSWER.—It is impossible to make explicit provisions for every contingency that may arise in connection with a blood transfusion. Legally, the physician is expected to exercise his best judgment when confronted with a medical problem and to practice according to standards measuring up at least to the level prevalent in the community. 1. As soon as the baby is born he legally becomes a person separate from his mother. A valid blood test for syphilis should be performed on the mother or the father if either is used as a donor for the infant. In practice, if the mother is used as donor for her baby, the blood test for syphilis is often omitted. If the mother had a syphilitic infection she would have already transmitted it to the fetus in utero, and there would be no opportunity to acquire a fresh infection in the immediate postpartum period in the hospital. Therefore, if the mother is used as a donor for her baby immediately after birth, there could be no objection to the omission of the blood test for syphilis. 2. Any of the tests for syphilis in common use is acceptable for this purpose. Generally, a rapid flocculation test, such as the Kline or Kahn test, is used because of the time factor before the transfusion. 3. For recent syphilitic infection, the most reliable test is the dark field examination of a lesion. The fact that a patient or a parent of the patient has waived the requirement for a blood test before a transfusion when there is ample opportunity to perform such a test will not necessarily protect a physician if syphilitic infection is transmitted to the patient as a result. Although such a signature may be helpful in case of a law suit, the law provides that no physician may negligently or knowingly submit a patient to harmful treatment, even with the patient's consent.

DYSPNEA ON EXERTION

TO THE EDITOR:—*A 61-year-old man has marked dyspnea on exertion, accompanied by expiratory asthmatic sounds. At other times, his chest is clear. Both when his chest is clear and when it has asthmatic sounds, his chest capacity is 2,300 cc. His difficulty began two months ago, after a cold. He had a similar difficulty for a short period in 1941 and again in 1950. During the past six years, he has inhaled the dust from fluorescent tubes four to six times a year. Can this have contributed to his dyspnea?*

Robert Null, M.D., Long Beach, Calif.

ANSWER.—It is not stated whether the patient inhaled the dust from the inside of broken fluorescent tubes or from the outside of unbroken ones. If the latter, then there is no possibility of beryllium acting on the respiratory tract. If the former, there is a possibility that inhaling the dust from broken fluorescent tubes for short periods once every two or three months may cause the symptoms of acute respiratory allergy to beryllium, provided there is beryllium in the tubes. Beryllium has not been used in the manufacture of fluorescent tubes since 1949, but it is possible that he may inhale the dust from broken tubes manufactured before 1949. X-ray of the lungs may reveal if there is any permanent damage in the form of chronic pulmonary granulomatosis.

OCULAR MUCOUS MEMBRANE SYNDROME

To the Editor:—*I would like information on conjunctivitis associated with erythema multiforme, which, I believe, is known as the Stevens-Johnson syndrome. I have a patient who had a severe attack of membranous conjunctivitis, pharyngitis, and erythema multiforme.* *M.D., Washington.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The consensus is that the Stevens-Johnson syndrome is a variant of erythema multiforme. The clinical features include acute onset of fever, vesicular eruption of the mouth, conjunctivas, genitals, and anus, and multiforme eruption of the skin. Partial or total blindness may result if ocular involvement is severe. The cause is unknown, but a virus has been implicated in certain cases. Treatment includes general supportive measures, antibiotics to combat secondary infections, and perhaps adrenocorticotropic hormones. Pertinent references are included in an article by Huff and Addenbrooke on eponymic syndromes of the skin, eyes, ears, nose, and throat (*Eye, Ear, Nose & Throat Month.* **31**:303 [June] 1952).

Answer.—Several excellent reviews of the ocular-mucous membrane syndrome have been made in recent years. Robinson and McCrumb (Comparative Analysis of Mucocutaneous-Ocular Syndromes: Report of 11 Cases and Review of Literature, *Arch. Dermat. & Syph.* **61**:539 [April] 1950) conclude that the condition is a variant of erythema multiforme exudativum (Hebra's disease). It has been described by a variety of terms, depending on the mucous surface involved, the age of the patient, and the field of interest of the investigator reporting; these are Stevens-Johnson syndrome, Reiter's disease, pemphigus of conjunctiva, essential conjunctival shrinkage, ectodermosis erosiva pluriorificialis, and Behçet's syndrome. It has been suggested that Behçet's syndrome is a distinct entity (France, R.; Buchanan, R. N.; Wilson, M. W., and Sheldon, M. B., Jr.: Relapsing Iritis with Recurrent Ulcers of Mouth and Genitalia, [Behçet's Syndrome], *Medicine* **30**:335 [Dec.] 1951).

At onset of the disease there may or may not be fever, and there may be headache and prostration of varying severity. Simultaneously, or within 72 hours, there is a cutaneous eruption characteristic of erythema multiforme symmetrically involving the face, arms, and legs. The onset may be marked by the appearance of oral lesions with bullae or erosions of the lips and buccal membranes and complete absence of skin manifestations. Eye manifestations, such as conjunctivitis, iritis, or keratitis, may occur at the onset or be delayed several weeks. Involvement of other mucous surfaces may cause balanitis, urethritis, arthritis, vaginal erosions, pharyngitis, rectal strictures, otitis media, and pulmonary complications.

The ocular symptoms vary in severity and may disappear without residue or may persist for years. The commonest type of ocular involvement is a catarrhal conjunctivitis which clears rapidly and may not be noted. The most serious involvement is a pseudomembranous conjunctivitis with necrosis, followed by cicatrization and symblepharon formation. The cornea may be involved, with marked scarring and diminution of vision; the iritis of Behçet's syndrome is especially likely to cause visual loss.

The cause of the disease is not known. Robinson (Ocular-Mucous Membrane Syndrome, *M. Clin. North America* **35**:315 [March] 1951) believes it is probably caused by a virus and that a "trigger mechanism," such as the administration of barbiturates, coal tar derivatives, and penicillin may set in motion the forces that produce this condition. Hansen (Mucocutaneous Eruptions, Including Conjunctiva, Due to Drug Sensitivity: Etiological Similarity to Pemphigus, *Tr. Am. Ophth. Soc.* **48**:395, 1950) suggested the condition may be due to drug sensitivity, with the sulfonamides being especially common offenders. The question is difficult to settle, however, since the presenting symptoms often are such as to lead to treatment with the sulfonamides; then the ocular symptoms, occurring some weeks later, may be attributed to the drug rather than be recognized as a sequela of a syndrome that had its onset prior to the sulfonamide therapy.

REPEATED UNSUCCESSFUL PREGNANCIES

To the Editor:—*A 38-year-old woman with early symptoms of pregnancy was seen on Jan. 15, 1952. In the past, she had had mumps, measles, and whooping cough, without complications, an appendectomy, tonsillectomy, and adenoidectomy. Her first child was born in 1942. Although she had pyelitis in the latter part of pregnancy, this was a full-term baby, weighing 3 lb. 6 oz. (1,477 gm.). She was in labor 12 hours. The baby lived two days and died of convulsions of undetermined cause. The second pregnancy occurred in 1944. The patient had a full-term baby that died at the age of 3 months of meningitis of questionable diagnosis. This baby also had pyloric stenosis. The patient's third pregnancy occurred in 1945, resulting in a full term baby, weighing 5 lb. 4 oz. (2,381 gm.), which lived. Her fourth pregnancy ended in 1948 with a stillborn baby, almost full term, the cause of the stillbirth not being known. Her fifth pregnancy ended in a miscarriage at four months, the cause of which is unknown. On physical examination, the patient was essentially normal. In June, edema of the ankles developed, which later extended to include the lower third of the thigh. On July 22, her blood pressure was 154/100 mm. Hg, and on July 25, it was 150/86 mm. Hg. A roentgenogram showed a small baby in the left occiput anterior position; the fetal heart rate was 162. The patient entered the hospital on Aug. 6, with irregular minor contractions and a slight brownish discharge. These contractions continued for 12 hours, during which the baby's heart rate was within the range 140 to 156. She went home the following day, and two days later she felt no further motion of the baby. Fetal heart sounds could be detected at the office, and three days later she went into labor spontaneously and delivered a stillborn infant with beginning maceration. There was no apparent defect in either the infant or the placenta. This woman and her husband have negative reactions to the Wassermann test and both have type O, Rh-positive blood. There is no pertinent family history. The patient's menstrual history is normal. I am at a loss to explain this peculiar obstetric history.* *M.D., Nebraska.*

Answer.—The most recent stillborn infant could have resulted from chronic hypertensive vascular disease of the mother. The severe edema and the moderate hypertension are indicative of this condition. A quantitative urinary albumin determination may have revealed considerable albuminuria. The patient probably had a localized abruption of the placenta on Aug. 6 when she had some bleeding. The placental separation was not sufficiently extensive to cause fetal death promptly; however, there usually are vascular changes in the placental site and extensive infarction of the placenta, which predispose to fetal death from an impaired circulation. It is more difficult to account for some of the patient's other pregnancy accidents, although some of these may have resulted from her hypertensive vascular disease. The question of the advisability of another pregnancy should be considered. Chronic hypertensive vascular disease progresses with age and is likely to be increasingly severe in each pregnancy. If this patient should insist on trying again, she should be managed carefully until about six weeks from term, and the baby should be delivered by cesarean section. Such babies are smaller than normal because of inadequate circulation, but may survive. There is a real hazard of severe abruption of the placenta, which may endanger the mother's life.

STREPTOMYCIN TOXICITY

To the Editor:—*What can be done about neurological toxicity other than eighth nerve damage caused by parenterally administered streptomycin? This possibility has been considered in the differential diagnosis in a patient in whom abnormal reflex changes developed while receiving streptomycin treatment for pulmonary tuberculosis.*

George P. Nichols, M.D., Statesan, Wis.

Answer.—No convincing evidence is available to indicate that streptomycin has recognizable neurological toxicity for any nerve but the eighth cranial nerve. The extensive tabulations of streptomycin toxicity and therapeutic efficacy that have been published by the Veterans Administration constitute the most extensive source of such information.

INFECTION OF SEMINAL VESICLE

To the Editor:—*A patient has had hemospermia and frequent erections for two years. He awakes in the middle of the night to urinate and cannot fall asleep again. A roentgenogram of the left seminal vesicle shows the convolutions to be slightly straightened and dilated and that the ampullovesicular space has disappeared, and the dye shows patency of the vas deferens to the epididymal region. A rectal examination revealed a normal prostate and right seminal vesicle. The posterior portion of the urethra and the verumontanum were congested but at present are normal. Topical application of phenolglycerite and urethral dilatation were done. Examination failed to disclose any abnormalities in the heart, lungs, or abdominal viscera, other than an enlarged spleen. A sternal puncture showed no abnormalities. The white blood cell count was 6,200, with 42% polynuclear leukocytes, 5% stab cells, and 52% lymphocytes. The erythrocyte sedimentation rate was 6 mm. in an hour. The spleen does not extend below the costal margin. There has been no diminution of the hemospermia, in spite of two years' treatment. An outline of treatment for this condition would be appreciated.*

Benjamin Berger, M.D., New York.

Answer.—This patient undoubtedly has a chronic infection of the left seminal vesicle. This may be accompanied by some stenosis of the left ejaculatory duct. These infections are nonspecific, persistent, and usually follow no normal pattern. Elimination of all possible foci of infection together with attempts to improve the drainage of the seminal vesicle and, in some instances, antibiotic therapy, constitute the only rational management. Often, too much is made of the condition, and the patient becomes highly neurotic and develops a fixation that interferes with his good judgment. Cultures of the expressed material from the seminal vesicle may indicate some specific antibiotic therapy. Some urologists practice dilatation of the ejaculatory ducts by means of a special instrument, but the results of this procedure are questionable in many instances.

VITAMIN B_{12} AND ARTHRITIS

To the Editor:—*Could you advise me if there is justification for the use of vitamin B_{12} in cases of chronic arthritis in which the hemoglobin level is higher than 100% and the number of red blood cells is higher than 5 million. Is there danger of producing polycythemia?*

George Kalichman, M.D., Santa Monica, Calif.

Answer.—Vitamin B_{12} and liver extracts are not capable of producing polycythemia, since these substances do not "stimulate" marrow production but supply only necessary catalysts for red cell production. Any surplus of such a catalyst simply will not be utilized in the production process. Although cobalt may produce polycythemia in animals and in humans (most likely by blocking SH groups), vitamin B_{12}, which contains cobalt, does not have this latter action, because the cobalt is incorporated in a complicated chemical structure and is, thus, prevented from any activity similar to that of freely available cobalt.

COLIC IN INFANTS

To the Editor:—*What are the accepted principles regarding the etiology and treatment of infantile colic? Should it be possible to control this condition without the use of drugs, that is, by attention to amount and frequency of feedings, composition of feedings, and manipulations for release of gas? I am especially interested in the value of or contraindications for the use of phenobarbital sodium and diphenhydramine (benadryl®) hydrochloride, singly or in combination, in this condition.*

A. Soucek, M.D., Madison, Wis.

Answer.—The term "colic" describes a symptom, paroxysmal abdominal pain. In infancy, it may be precipitated by exposure to cold or the ingestion of cold food. Colic sometimes occurs after ingestion of a food to which the patient is sensitive. It may also be due to excessive air swallowing, hunger, underfeeding or overfeeding, constipation, flatulence, or a diet high in carbohydrates. Some physicians believe that "colicky" infants form a definite constitutional group characterized by hypertonicity of the voluntary muscles, exaggerated reflexes, and a neurotic background.

Symptomatic treatment is urgently indicated in colic. An enema and the application of heat to the abdomen are harmless measures and may give prompt, even if only momentary, relief. One must not lose sight, however, of the possible organic causes of abdominal pain. Treatment would depend on the cause of the colic. Hunger, underfeeding, or overfeeding should be controlled by proper dietary measures, and prevention of excessive swallowing of air may be aided by the use of nipples specially constructed for this purpose. If the colic is due to allergy, the offending allergen should be determined and eliminated from the diet. Diphenhydramine hydrochloride is beneficial as an antihistaminic and is especially useful in inhalation allergies. It would hardly seem appropriate to use this drug in a nonspecific manner, as in the treatment of colic. Phenobarbital sodium is a sedative and certainly not a specific cure for colic. It would not aid a hungry infant or one with colic caused by overfeeding, flatulence or aerophagia. Perhaps the phenobarbital would be best prescribed for the parents of the infant with colic.

ESCHERICHIA COLI RESPIRATORY TRACT INFECTIONS

To the Editor:—*I have seen an increasing number of Escherichia coli infections of the chest that are resistant to therapy. In colon filling studies, I frequently find an impotent ileocecal valve. These episodes often follow some of the severe gastrointestinal disturbances that are common at this time, for which antibiotics have been given. Is the change in intestinal flora responsible for the migration of the Esch. coli to the respiratory tract? Is there any evidence that pesticides, especially the phosphate esters, may be involved? What therapeutic measures have been effective in such patients?*

Francis M. Pottenger Jr., M.D., Monrovia, Calif.

Answer.—It is likely that infections of the upper respiratory tract due to Esch. coli are related to previous chemotherapy. Although it is known that there may be an increase in the number of organisms in the small bowel during acute inflammatory states, such as may be present in an acute gastrointestinal upset, it is highly improbable that the intestinal flora would ascend through the stomach and esophagus to the pharynx and produce respiratory tract disease. An "impotent ileocecal valve" probably cannot be incriminated as a mechanism. With the administration of antibiotics, such as penicillin, that remove gram-positive organisms from the pharynx, the gram-negative organisms are left, and they multiply and, on occasion, produce disease. In children especially, chemotherapy has often resulted in conversion of the bacterial flora of the pharynx so that Esch. coli or other gram-negative bacteria are the predominant organisms. This may occur even with the broad spectrum antibiotics, such as aureomycin, chloramphenicol, or terramycin. The resistance of these organisms to therapy reflects their natural or acquired insensitiveness to the drugs, the administration of which allowed their survival and multiplication. If the usual antibiotics fail to eradicate them, one of the sulfonamides, in full therapeutic doses, may be effective.

ANISEIKONIA

To the Editor:—*What is actually known concerning the basis for the condition known as aniseikonia? Would it be unreasonable to assume that aniseikonia may be a functional somatic manifestation of an unresolved emotional conflict with latent anxiety?*

Alex E. Gold, M.D., Hempstead, Long Island, N. Y.

Answer.—Aniseikonia is an anomaly of binocular vision in which the retinal images or their cerebral correlates are unequal and present a handicap to fusion and a faulty space perception. It is sometimes associated with anxiety, but no more frequently than other diseases that produce eye strain, headache, dizziness, and nausea. Healthy, well-balanced persons may have aniseikonia without apparent ill effect, but they usually show habitual

ANNUAL SESSION • NEW YORK CITY • JUNE 1-5, 1953

suppression of part of the visual field of one eye. This adaptation is especially easy for young people and children.

Aniseikonia is most often the result of an unequal refractive condition in the two eyes. One eye has more astigmatism, more hypermetropia, or more myopia than the other. The correction of such mechanical errors by glasses will produce retinal images of unequal size or shape, resulting in aniseikonia. Astigmatism is due to distorted corneal curves; hypermetropia and myopia are due to deviations from the normal axial length of the eye or to edema of the crystalline lens of the eye in senility. Each of these causes of aniseikonia can easily be demonstrated, and treatment based on this determination of the cause is effective in 70% of the cases. Aniseikonia can be produced in the normal human being, and there are more than 200 articles in the literature on the subject. (See the bibliography in Ogle, K. N.: Researches in Binocular Vision, Philadelphia, W. B. Saunders Company, 1950.) It is unreasonable to assume that the disease could be combated on the basis of unresolved emotional conflict and autonomic imbalance.

AIR EMBOLISM

To the Editor:—*A woman, aged 27, with a thoracoplasty on the left and extrapleural pneumothorax on the right, with negative sputum, came in for her usual pneumothorax refill. She complained of diarrhea and malaise, but, since these were not new complaints, I proceeded to give her a refill. When 10 cc. of air had been introduced (second interspace anteriorly) she complained of chest pain. I stopped administering the air, turned her on her left side, and lowered her head. She turned cyanotic, with blood on her lips. Despite administration of epinephrine and oxygen and artificial respiration, she died quickly. At no time could I detect any heart sounds. Did she have an air embolism into the right side of the heart? What might have been done to prevent this? What other emergency measures could have been utilized?*

M.D., California.

Answer.—The symptoms described appear to be consistent with a diagnosis of air embolism. Once such embolism has occurred, there is no known effective treatment. Since air embolism can occur only when air is injected into a vascular channel, prevention consists of meticulous care in determining the exact site of the needle point prior to introduction of air. The high positive pressures required of extrapleural pneumothorax would appear to involve greater risk of air embolism than is the case with intrapleural pneumothorax, although no figures are available to confirm this belief.

TORTUOUS VEINS NEAR POUPART'S LIGAMENT

To the Editor:—*A 20-year-old woman (para 2) complains of moderate ache in the veins of the upper right thigh just below Poupart's ligament, primarily at the time of menstruation. Inspection reveals slightly prominent tortuous veins just above the saphenous fossa ovalis of the right thigh. Physical examination reveals nothing significant except a slight case of varicose veins of the right leg and slightly less of left leg. There is no dysmenorrhea, and the pelvis is normal on examination. Should I attempt intravenous sclerosing treatment as would be employed for the usual case of varicose veins in the legs, or does the high location of these varicose veins necessitate saphenous vein ligation?*

Leonard J. Janish, M.D., San Diego, Calif.

Answer.—Tortuous veins at or above the saphenofemoral junction usually indicate a valvular defect in the iliofemoral and upper saphenous segments. The defect may be congenital or postphlebitic in origin. The formation of a clot so close to the deep venous system is not without the hazard of ascending thrombosis or embolism. Ligation of the saphenous vein at its junction with the femoral may not abolish the varicosities if they prove to be collateral vessels emptying into the deep venous system of the same or opposite limb. The pain occurring at menstruation probably radiates along the femoral or saphenous nerves and may indicate pelvic varicosities. Reassurance is often the most useful type of therapy, since the reflux of blood from the hypogastric venous system can only be stopped by ligation of pelvic veins during a pelvic laparotomy.

PREGNANCY FOLLOWING LIGATION OF VENA CAVA

To the Editor:—*What is the prognosis for a woman who has had an inferior vena cava ligation and is now two months pregnant? Two years ago, at the time of her original surgery, she was advised not to increase her family. Her present physical condition is good. Is a therapeutic abortion indicated? What is the best way to handle this patient?* *M.D., New Jersey.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—Collins, Weinstein, Norton and Webster (*Am. J. Obst. & Gynec.* **63**:351, 1952) report that, of 50 patients who survived ligation of the inferior vena cava without having a sterilizing procedure either before or at the time of ligation, and theoretically could become pregnant, 11 (22%) conceived. There were 15 pregnancies among the 11 women. In five patients six abortions occurred, and in the six other patients all nine pregnancies went to term. No difference in the course of pregnancy, labor, or the puerperium could be detected in these women as compared to women who had not had a previous ligation of the inferior vena cava and ovarian veins. In view of these facts, there is no justification for interrupting the pregnancy in this patient. No special antenatal care is necessary unless complications arise.

Answer.—The prognosis for a woman who has had an inferior vena cava ligation depends on her reaction to the original surgery. Since this was two years ago and her present physical condition is good even though she is now two months pregnant, the future management will depend on how she reacts to the further development of the pregnancy. As long as her general and local condition remains good, the pregnancy should be allowed to continue. If serious circulatory disturbances manifest themselves and cannot be controlled by bed rest and parasympathetic blocks, the pregnancy should be terminated. After the baby becomes viable, a cesarean section could be done with or without sterilization, according to the exigencies of the case. If no serious disturbance arises, vaginal delivery could be permitted.

PEDICULOSIS OF EYELASHES

To the Editor:—*I would like to comment on an answer to a query regarding "Pediculosis of Eyelashes"* (The Journal *Oct. 11, 1952, page 630). It is rather strange, to say the least, in this DDT age, to see mercury ointment (I assume it is mild mercurial ointment [blue ointment]) suggested for use on parts of the body as delicate or more so than scrotum or penis. The physician has to deal with perhaps half a dozen crab lice. Why not wear a pair of magnifying glasses, if needed, and use a pair of tweezers to slip the phthiria out of the hair. The same can be done for the nits. No harm is done if, in the procedure, a nit carries the eyelash with it. This important detail of regional dermatological therapy is not mentioned in all textbooks. How can the physician carry out treatment if he possesses a book outlining the treatment of pubic pediculosis without mentioning what to do when the lice get on the eyelids? No application of medicament is needed. If a cure is not obtained, the reason is that reinfestation occurs from the same source.*

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JITTER LEGS

To the Editor:—*"Jitter legs" is a topic repeatedly appearing in Queries and Minor Notes. It is a most annoying condition featuring an intolerable, restless sensation in the legs after the patient retires, obliging him perhaps to get out of bed and walk a bit instead of sleeping. The muscles are not cramped, the toes are not cold, the distress is not to be called pain, and explanation of the phenomenon is lacking. In patients who have described the complaint to me and in my own mild case personally experienced, I have obtained relief by diminishing the caffeine intake to one cup of coffee per 24 hours, taken in the morning, and by the administration of an iron and vitamin preparation.*

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